CACTUS AND Ssucculent JOURNAL

Of the Cactus And Succulent Society Of America

Vol. XXVI MAY-JUNE, 1954 No. 3

FIG. 47. Photo taken about 1934 at the University of California Botanical Garden, Berkeley, of James West (right) and the Director of the Garden, Dr. T. H. Goodspeed (left).

CACTUS AND SUCCULENT JOURNAL

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Vol. XXVI MAY-JUNE, 1954 (Price 50c) No. 3

A Judge's Opinion of the Cactus and Other Succulents Exhibit of the California Spring Garden Show, Oakland, California.

One of the rewards for traveling north to judge at the California Spring Garden Show was the fine exhibit of cacti and other succulents arranged by The Cactus and Succulent Society of California.

Four different classes of exhibits called for in the Show Schedule were taken by this group:

(1) Entering the show grounds one went first to the outdoor garden of cacti and other succulents, planted in a space calling for a minimum of 1140 square feet, with a suitable background. The Society built a white adobe wall, red-tile capped, with an arch and bell, showing a vista through the arch ending in a huge Opuntia. In this space, about one-half an ordinary city lot, a naturalistic planting including several large rocks featured thousands of beautiful mature plants. This was one of the best exhibits of the kind we have ever seen.

(2) Inside the Show Auditorium, specimen plants were displayed. Here an educational exhibit was arranged, using interesting aspects of succulent plants, colored pictures, charts, key lists of families and genera, charts on grafting, soils, etc., adding to the value of this exhibit.

(3) A collection of the more delicate succulents, many so rare that the Judges knew them only by hearsay rather than sight, was judged on cultural merits and rarity. All the pots in these last two exhibits were covered with aluminum foil and set behind glass screens.

(4) And, far from least, mature miniature plants were displayed on a slanting surface, set in peat, the circle of each three-inch pot showing in a pattern above the peat, the plants surrounded with lighter-toned material. The type of plants was well divided, with the lack of a miniature Aloe being a minor disappointment. Not less than fifty plants were required in this class.

Altogether the succulent section of the Show was a thorough success, while all of the prize money goes into the Club treasury.

DON B. SKINNER

PLANT MULTIPLIER

Members of our organization may be particularly interested in a *Life* story which appeared in the May 17th issue about a new method of propagating trees, shrubs and flowers. "Airwrap," a modern adaptation of an old Chinese horticultural system, provides gardeners with a quicker way of reproducing plants, or facsimiles of a neighbor's shrubs than ever before. Any gardener will be gratified by the rapid appearance of strongly developed roots on branches, slips or shoots, and the elimination of the need to keep them in constant moisture.

AN OPEN MEETING OF THE CACTUS AND SUCCULENT SOCIETY

The Cactus and Succulent Society of America, Inc., will hold a meeting, open to the public, with everyone invited to attend, on Thursday evening, June 3rd, at 7:30 p.m., in the Auditorium of the Pasadena Public Library, located at Walnut Street and Garfield Avenue in Pasadena.

The speaker will be Dr. E. Yale Dawson of the Allan Hancock Foundation, University of Southern California, speaking on, "Giant Cacti in Southern Mexico" and illustrating his talk with excellent colored slides.

There will be Door Prizes for the lucky winners.

GENE LUCKENBACKER

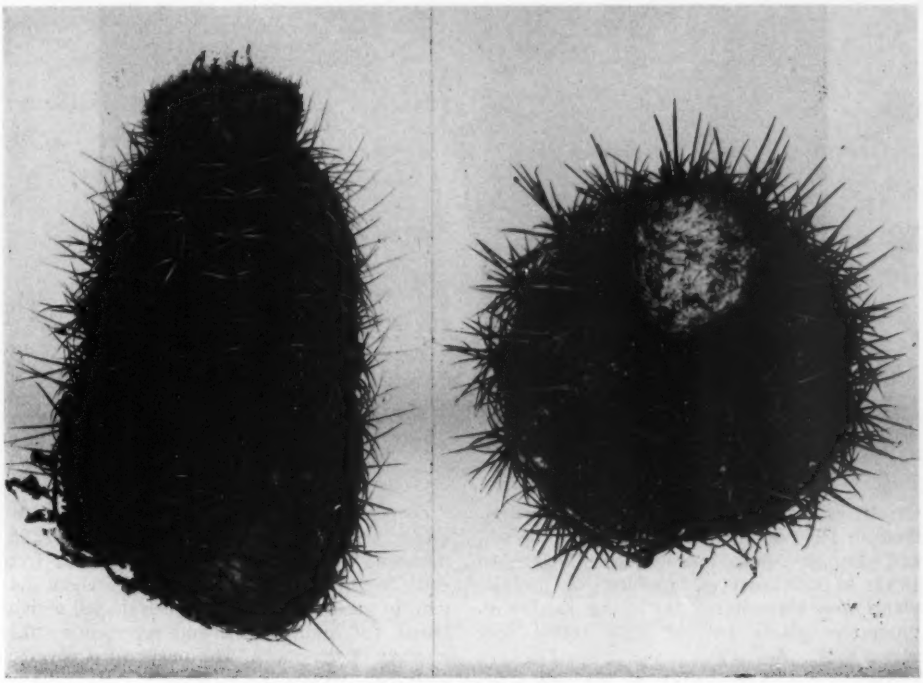

FIG. 48. *Cactus oaxacensis* Britton & Rose. Habit, x 0.4

CACTUS OAXACENSIS IN JALISCO[1]

By E. YALE DAWSON

Among several interesting localities along the Pacific coast of Mexico visited by the Allan Hancock Pacific Expedition of 1954 was Bahía Tenacatita, Jalisco, site of a nascent seaside resort for inhabitants of the inland city of Guadalajara. Our marine laboratory ship, Velero IV, was anchored centrally in the bay as base for the biological collecting activities of shore parties in various parts of the area.

Although my principal concern was for collections of marine algae during the low tides of the season, there were times when the rising sea water forbade profitable work at the beach and permitted me to set out after cacti. My particular hope was to find mature, fertile examples of *Cactus oaxacensis* of which I had observed small, sterile plants along nearby Bahía Navidad in December, 1946 (Dawson 1949, p. 75).

At a station on the north side of the bay I had hardly scrambled up the rocks from the beach before I came upon a fine plant with fully developed cephalium. Subsequent exploration of the sea cliffs revealed others. The plants grow sparsely in rocky places immediately above high tide level, so near the sea, indeed, that they undoubtedly are subjected to occasional wetting by salt sea spray, particularly during the summer season of severe storms. Figure 48 shows two of the mature plants collected which measured 16-20 cm. in height and 12-14 cm. in diameter. One of them bore a fruit which had been partially consumed by a bird, while the other produced a flower the next day (February 5) aboard ship. These are shown in Figure 49. Another fruit was produced in the laboratory on February 25.

Cactus oaxacensis was described by Britton and Rose (1923, p. 289) in the appendix of their final volume, a fact which seems to explain how it was overlooked by Bravo (1937) in her account of the Mexican cacti. The type material came from Salina Cruz, Oaxaca, where the plant had been collected and (or) photographed by

[1]Contribution number 133 from the Allan Hancock Foundation, University of Southern California.

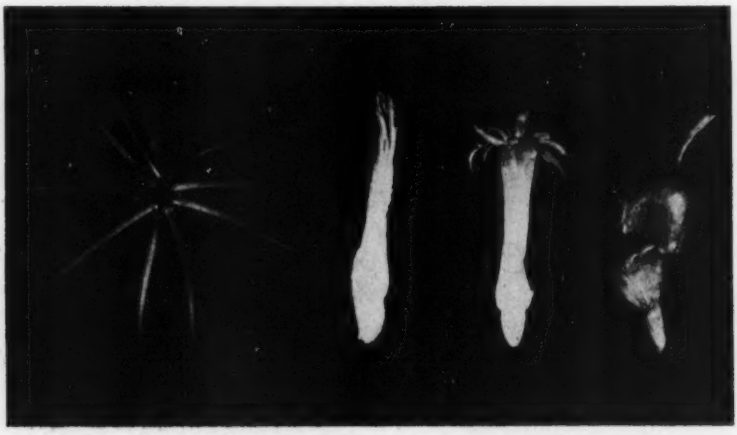

FIG. 49. *Cactus oaxacensis* Britton & Rose. Spine cluster, closed flower, open flower, and fruit, x 1.

Orcutt, Reko, Purpus and Conzatti. I found it there in 1947 on the hills overlooking the sea, and again in company with Howard Gates in 1952. In both instances, however, only juvenile plants were encountered, for in that locality reproductive plants are for some reason very scarce.

This is the only species of the genus yet known from the Mexican west coast, but its range seems to be extensive. Doubtless it will ultimately be found in many localities along the shores of Jalisco, Michoacan, Guerrero and Oaxaca when these relatively inaccessible coasts are more fully explored.

My material conforms well with the Britton and Rose description although considerable variation is indicated by the two specimens both in body form and in spine color and length. The flowers are pinkish rose only in the exposed part, the slender tube being colorless. The fruits bear the dry, peristent flower tube and are the same color as the flowers but of a somewhat deeper shade at the exposed end. The thick-clavate fruit which appeared on February 25 measured 26 mm. long by 11 mm. at the free end. The black seeds which measure about 1.4 mm. in greatest length are pouch-shaped with a broad, flat hilum at the end representing the opening of the pouch. The seed coat is covered with low, rounded sculpturings.

Of the specimens illustrated in figure 48, that on the left is deposited in the Herbarium of the Hancock Foundation; that on the right in the Herbarium of Pomona College, Claremont, California.

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Bravo, Helia, 1937. Las Cactáceas de México. pp. i-xiv, 1-755. Imprenta Universitaria. Universidad Nacional de México.

Britton, N. L. & J. N. Rose, 1923. The Cactaceae . . . Carnegie Institution of Washington Publ. 248. Vol. 4, pp. i-vii, 1-318. Reprinted 1937, Scott E. Haselton, Abbey San Encino Press, Pasadena.

Dawson, E. Y., 1949. A naturalist's diary on the Mexican west coast, Pt. IV. Jour. Cactus and Succulent So. Amer. 21(3): 74-76.

WALTON'S CATALOGUE: A DATE CORRECTION

I should like to correct a widespread error regarding the date of publication of "The Cactus and other Succulents—Amateur's Guide and Price List" by F. A. Walton—an early trade list resembling in format the catalogues of Blanc, from which many of the illustrations were taken. The only indication of a date is the figure "1845" on the cover, but a glance at the contents soon shows that many of the species listed were not in cultivation or named until the eighteen-nineties. What the significance of this "1845" is, I do not know: perhaps it was the year of founding of the Handsworth Nurseries, but it is certainly not the date of publication, for I doubt if F. A. Walton was even born then.

From other evidence the correct year of publication is found to be 1899 or perhaps a little earlier. The "Amateur's Guide and Price List" is advertised in "The Cactus Journal," of which Walton was editor and principal advertiser, first in Jan., 1899, and each month subsequently until April, 1899. Walton would hardly have offered for sale a catalogue that was already out of date, and the lack of any earlier publicity suggests that the above approximates to the publication date.

I mention the above in some detail in view of Mrs. Beahm's article in the March-April JOURNAL (p. 61) wherein she credits a number of Epiphyllum hybrids with a far earlier origin than is permissible on the strength of this false date on Walton's list.

G. D. ROWLEY
John Innes Horticultural Institution,
Bayfordbury, Hertford, England,

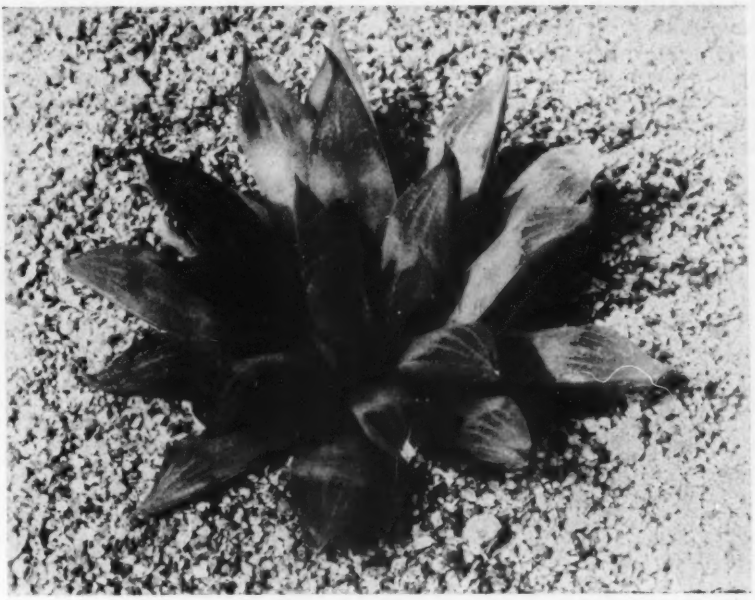

FIG. 50. *Haworthia longibracteata* G. G. Smith nat. size.

Notes on Haworthias

J. R. BROWN

Haworthia longibracteata G. G. Smith in Journ. So. Afr. Bot. XI (1945) 75, fig. 4 & Pl. XII.

Plant stemless, to 10 cm. diam., proliferous from the base and forming clusters.

Leaves numerous, erect-spreading, incurved at tip, to 5.5 cm. long, 15-17 mm. broad and about 10 mm. thick in thickest part, more or less oblong-obovate, acuminate, light green, the simple, persistent end-bristle 2-3 mm. long; lower part of face of leaf more or less convex, smooth; end-face to 17 mm. long, to 16 mm. broad, convex, smooth, pale green, dully pellucid, with minute lengthwise whitish flecks and with several more or less converging lines, 3 longer, the others shorter, the middle one nearly reaching to the tip; back convex, smooth, with a number of lengthwise pellucid spots towards the tip, and with about 12 somewhat obscure darker green lines, obliquely keeled; the keel towards the tip and the margins with small, often more or less scattered, whitish teeth.

Locality: Cape Province: Riversdale Distr., near Still Bay.

Named because of the conspicuous sterile bracts, especially those towards the base of the peduncle.

The plant shown in the illustration of this Haworthia had more and somewhat broader leaves the year following the one in which this photograph was taken, but this photograph shows the character of the plant very well. It seems to be a somewhat variable plant, as material examined and which was sent over by Mr. Dekenah who discovered this Haworthia, also shows a plant with much more prominent teeth and in addition to the pellucid spots on the upper part of the back of the leaf, some of the spots are replaced by low, more or less whitish tubercles, some of the tubercles more pronounced and bearing a small pellucid tooth.

The lines on the end-faces may be more or less uniting, especially in the lower part of the end-face; occasionally the back of the leaves may show 2 keels.

This is a pleasing light green Haworthia of the sect. *Retusae.*

Haworthia sublimpidula Poelln. in Repert. Sp. Nov. XLI (1937) 212, in Cact. Journ. VI (1937) 36, in Beitr. zur Sukk. (1939) 45, fig.

Plant stemless, 3-5.5 cm. in diam., proliferous from the base and forming clusters.

Leaves erect-spreading, somewhat narrowly ovate-lanceolate, acuminate, 1.5-2.5 cm. long, about 8 mm. broad and terminating in a short bristle about 1 mm. in length, rich green, somewhat shining; the triangular-ovate end-face flat to lightly convex, about 12 mm. long, 8 mm. broad at base, somewhat pellucid, and with a few darker, often broken and more or less unit-

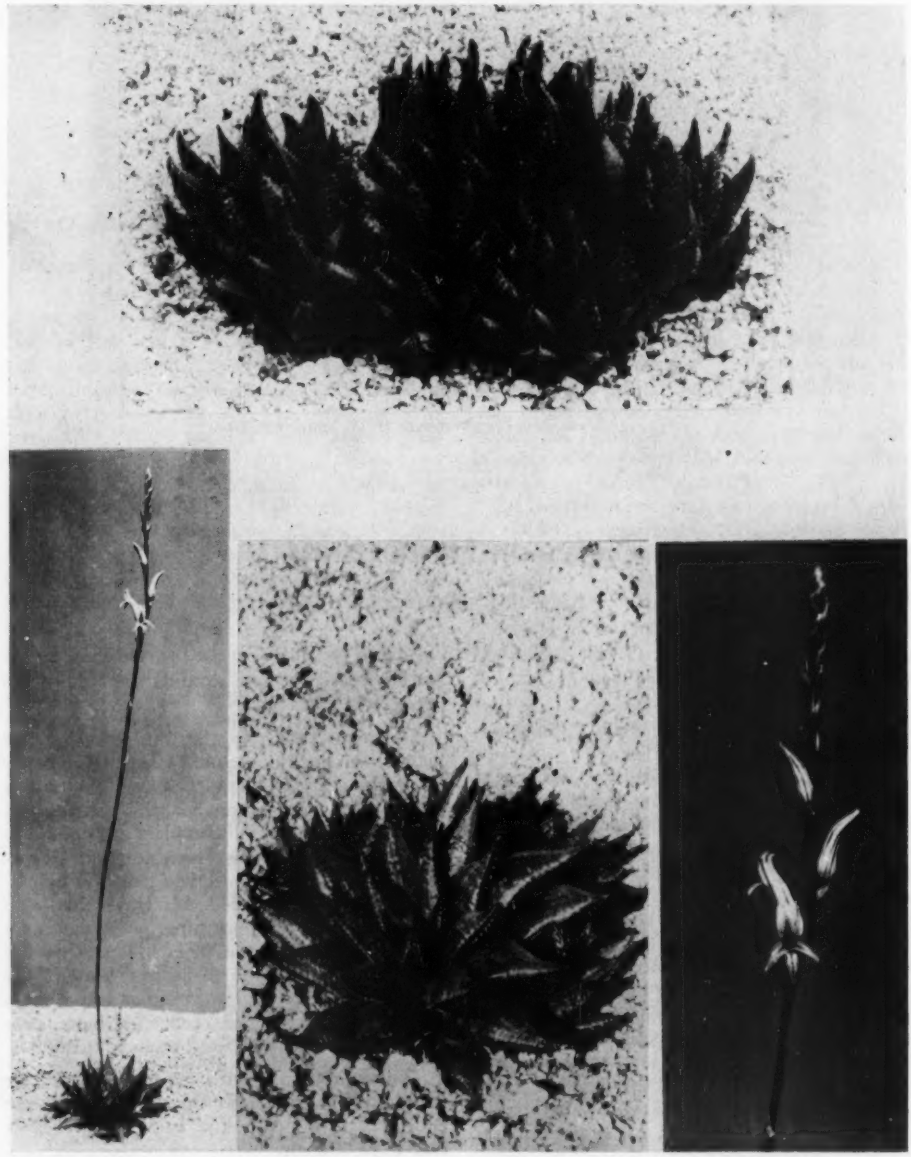

FIG. 51. *Haworthia sublimpidula* Poelln. (Top) a cluster of rosettes. nat. size. (Left) a plant in flower, flowering stem about 26 cm. tall. (Center) a single rosette, at the height of growth. nat. size. (Right) flowers. nat. size.

ing lengthwise lines, the middle line often reaching the tip and with minute concolorous or slightly paler warts; back rounded and obliquely keeled, or with 2 keels and very seldom with 3, and with numerous, small, concolorous or lighter colored, occasionally toothed warts; the margins and upper part of keel with minute, greenish, pellucid teeth, ½ to ¾ mm. in length.

Peduncle simple, slender, wiry, dark brownish-green, ¾-1 mm. in diam., 25 cm. or more in length including the raceme, sterile bracts numerous (12-18), many crowded towards base,

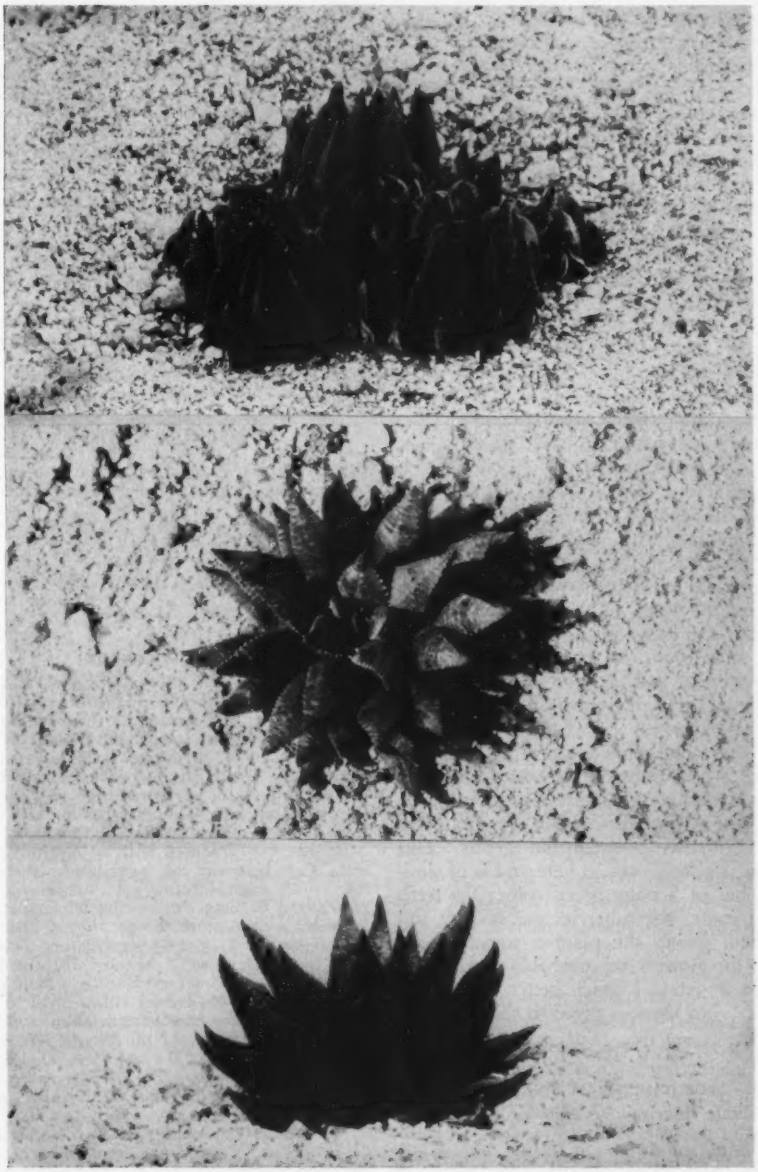

FIG. 52. *Haworthia sublimpidula* Poelln. variety. (Top) a cluster of rosettes. (Center) showing the pellucid faces when the plant is in vigorous growth. (Bottom) a side view of a single rosette. all nat. size.

deltoid-lanceolate, attenuate, with a dark brown keel, lowermost to 8 mm. long, the upper 4-5 mm. long; pedicels short, to 3 mm. long, decreasing upwards, with a narrow brownish keel; perianth about 13-14 mm. long, tube obclavate, about 3 mm. in diam. towards base, triangularly rounded, white, the inner segments with broad green lines, the outer with greenish-brown lines, distinctly greenish in the throat.

Locality: Cape Province: Swellendam.

This Haworthia, (sect. *Retusae*) was received from Mr. Hurling, who discovered it, very many years ago. It is quite distinct and is probably most easily identified by its habit as shown in the photograph of a cluster of rosettes. The rosettes, especially if grown singly, may expand in the growing season and then the leaves may be quite spreading and the end-faces at this time may be pellucid and shining; the low tubercles on the end-faces are usually concolorous, while those on the back of the leaves are mostly of a lighter color than the leaf surface. Occasionally the end-faces may show a somewhat raised median lengthwise line or ridge, and the end-faces at times, may be quite limpid instead of sublimpid, but usually the end-faces may be only somewhat pellucid. The greenish pellucid teeth have very dilated bases and very seldom attain to a length of 1 mm. The end-bristle, which is soon deciduous, may be slightly longer than 1 mm. The face of the flower has a distinctly greenish appearance.

Due no doubt to an error, von Poellnitz gives the color of the warts on the end-faces as of a lighter color and those on the back of the leaves as being concolorous, as could be expected the reverse is the case and his illustration (loc. cit.) clearly shows the lighter colored warts on the back of the leaves.

Under the same name another plant was received but which showed somewhat differing characters, but quite evidently only a variation from the typical form, and which one has come to expect in this polymorphic genus. This Haworthia is also illustrated here and is of similar habit, but of a paler green color; the teeth are very minute, the tubercles are smaller and less toothed, giving the plant a smoother appearance; the flowers are probably smaller. It also seems to retain a much better appearance at all times. No name is given to this variation at this time.

* * *

FROM CINCINNATI, OHIO

"We dedicate this issue of *Nature's Gardener* to the founder of our club, Charles R. Cole. Past President Cole, better known to us as Charlie, through his study of the cactus learned about soil conditions and their effects upon plants. He believed that as the soil effected the plants so plants effected the health of humans. He believed that for plants to be healthy they had to be grown the natural way.

"Seeking more information upon this subject he came across the Organic Gardening magazine and found that its editor and he reasoned along the same lines.

"Wanting more people to hear about the organic way of growing plants and wanting to learn more about it himself he conceived the idea of forming a club here in Cincinnati to further the study of organiculture. So in March, 1950, he wrote to Organic Gardening stating his desire to form a club. A notice of his intentions appeared in the May issue and on the 26th of the following month a group of interested men met at his home to make plans for the organizing of the Cincinnati Organic Horticulture Club.

"He served this club for two years as its first president, during which time it grew to a membership of about 50. Serving as chairman of the Constitution Committee he helped to compose the present Constitution.

"The great love in Charlie's life are the Cacti. (Mildred is only his wife.) If you want to see Charlie's face light up with tender devotion just mention the Giant Saguaro or one of the Cereus, but be prepared to withstand several hours of discourse on the thorny plants of our deserts.

"This intense interest in succulent plants inspired him to organize the local cactus club, serving it as president for several terms.

"As a Regional Vice President of the American Cactus Society Charlie became nationally known in the cactus world.

"During one of his terms as president of the cactus club he had an influential part in establishing the cactus house of the Eden Park Conservatory and many of the specimens growing there now were donated by him."

* * *

FROM CANADA

Mr. Wm. H. Richardson of Niagara Falls, Ontario, Canada, is interested in hardy cacti that will withstand their winters. In February the temperature dropped to 4 degrees above zero but the average winter temperature is 20 to 30 degrees with now and then a warmer day. There has been considerable snow this year and it lasts for weeks at a time. His soil is sandy and "does not heave with the thawing and freezing." If he had clay soil he would have to mulch.

He has two Opuntias that he obtained from Alberta, Canada, where the temperature sometimes is as low as 40 degrees below zero. *Echeveria secunda-glauca* and Sedums survive the winters at Niagara Falls and require no protection.

Quoting Dr. Tischer of the Montreal Botanic Gardens (400 miles away) he says that the following plants have been winter tested there in Montreal where the winters are 10 degrees colder than at Niagara Falls. Both places have considerable humidity compared with the dry cold of Alberta. The cacti are: *Opuntia camanchica, O. humifusa, O. polyacantha, O. spirocentra, O, fragilis, Echinocereus viridiflorus, E. triglochidiatus, Coryphantha vivipara,* and *Neobesseya missouriensis.*

A North Dakota plant dealer adds other names to the list of hardy cacti: *Opuntia imbricata, O. pollardii,* and species of *Ferocactus.* Mr. Richardson would like a more complete list of plant that withstood winters for at least three years and he would also like to know which ones flower.

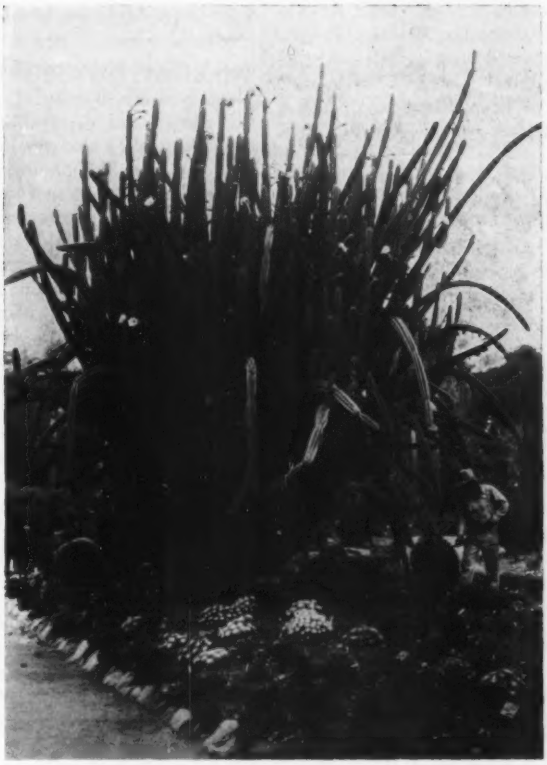

FIG. 53. A six-ton *Cereus xanthocarpus* is the most massive cactus in the Huntington Botanical Garden.

AN AFTERNOON AT THE HUNTINGTON BOTANICAL GARDENS, SAN MARINO

By MARY GLADE

On Sunday, March 28th, 1954, the Cactus & Succulent Society of America sponsored a tour of the Huntington Botanical Gardens in San Marino. It was a pleasure to see the many people who turned out to see the gardens—over a hundred and fifty in fact. Of course, I am only speaking of the guests who visited the cactus gardens. If one wishes to see all the cacti and other succulents, one must devote at least an entire afternoon to them alone.

Besides the officers of the Society, we were happy to have Mr. Hertrich, Curator Emeritus, and Mr. Townsend of the Huntington Botanical Gardens staff on hand to greet us.

After almost a week of rainy weather, the day turned out sunny and warm. The rain we have had recently has been very beneficial for the plants. They all looked the best I have seen them in a number of years. During the last year or two the gardens have undergone quite a change in the arrangement of the plants. Heretofore, many of the plants had been planted in rows. Now, many of the succulents have been planted at the base of some of the large cactus specimens. The succulents are all growing beautifully.

We started the garden tour at the upper end of the cactus gardens. The first plants to attract our attention were several Beschornerias in full bloom. They are members of the *Amaryllis* family with brilliant red stems and green and rose pendulous bell-like flowers. The inflorescences were five to six feet tall.

Many of the long-stemmed Aloes are in this part of the garden. Practically all of them were through blooming. January and February is the best time of the year to see them in all their colorful beauty. Some of the acaulescent species

could be seen in bloom back of the paths. At this upper end one finds Crassulas, Kleinias, Pachyverias and some Mesembs growing in the shade of Palms and other large plants. It is in this area that a number of Epiphyllums are planted at the base of Palm trees and allowed to climb the tree trunks.

Going on down this path we came to the beautiful clumps of Mammillarias, some of which were in bloom. Intermixed with the Mammillarias were the *Echinofossulocactus*. This seems to be the blooming season for some of their species as many had blossoms. Looking beyond the border plants we saw a number of the *Cleistocactus* with their firecracker-like flowers extending up and down their long stems. The large specimens of *Cephalocereus* and other large Cerei were in beautiful condition with some already in bud.

I have visited the Gardens many times, but I believe one never really sees all of the plants on one trip. On this visit one group of plants attracted my attention which never had before. There, just above some of the Mammillarias I saw some lovely clumps of *Ferocactus* which proved to be *Ferocactus glaucescens*. The plant body is a glaucous blue with golden spines about an inch long along the entire length of the ribs. Most of the *Ferocactus* and *Echinocactus* are not blooming yet, although I did see some flowers on some of the *Echinocactus grusonii*.

Farther on down the path we had the pleasant surprise to find that the side-paths had been opened especially for us. As a result, we saw many plants which we had never seen before. While wandering through some of these side-paths, I found that some of the Agaves are preparing to bloom. Several Yuccas were in full bloom, among which were *Y. treculeana* and *Y. torrey-parviflora*. Here in the background were many Aridarias, Cheiridopsis and Cephalophyllums which I had never seen, except in books. These Mesembs make such lovely border plants and are so colorful in the garden during the winter and early spring months. Among these Mesembs I also spied some lovely plants of Dudleyas and Stylophyllums. In the past these plants had been planted so far in the background that the visitors never saw them.

While we were looking at this section of the garden, Mr. Howland Atwood, another member of the Staff, joined us and gave us the names of many plants. Much of the recent care and actual planting has been done by Howland and the results are most gratifying.

Going back to the main path we saw many clumps of *Sisyrinchium bellum* or blue-eyed grass in bloom among the barrel cacti. Another plant scattered among the cacti was *Anthericum ramosum*.

The greatest changes are found at the lower end of the garden. Several years ago this section was planted in many species of Aloes. Now, one sees many beds of Sedums, Crassulas, Echeverias and Aeoniums. The plants seem to be happy in their new location and are growing profusely, each bed displaying its distinctive coloration. I was told the Aloes have been scattered throughout the entire garden.

In conclusion, I wish to urge anyone who has not visited the Gardens to do so and enjoy a collection of cacti whose scientific value is unequaled anywhere in this country. Here, the cactophile may see plants growing out in the open garden which can't be done in many parts of the country. After one has seen all the cacti, there are still many other beautiful areas to visit, among which are the Art Galley, rare books, Japanese Gardens, Palm Gardens, Camellia Garden, and Rose Gardens.

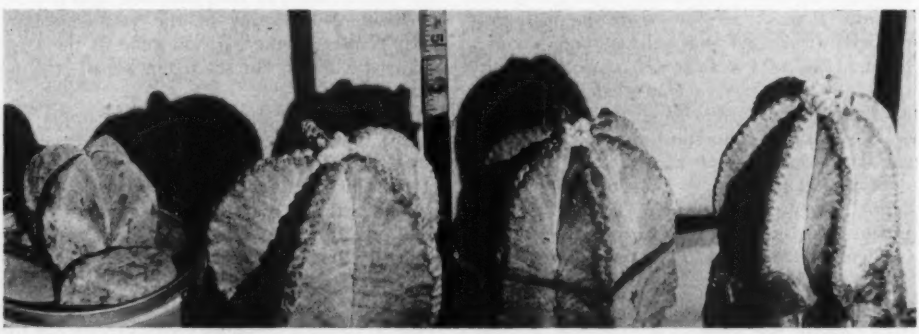

FIG. 54. A group of Astrophytums in Frank Mark's collection in Tucson, Arizona. Note that some have four, five, six, and seven ribs. Which is the Bishop's Cap?

Observations in an Arizona Garden

By Wm. Mastrangel
Of Rocking Horse Cactus Gardens

Here we are in the best season of the year for our southwestern flowering cacti. Our cactus gardens here are a mass of flowers—white, cream, pink, red, yellow, purple and reddish brown are the colors; large flowers, small flowers, giant and tiny blooms. This has been a result of the wonderful three-day rains which we had here in March—the most appropriate time of the year to receive rain for perfect flowering of the cacti.

Let's you and I take an imaginative walk through our cactus beds here in Phoenix. First, starting at aisle one on the right, we have a beautiful *Gasteria pulchra* (Ox Tongue) with two foot spikes filled with bright red-chartreuse flowers. Next to it, although inconspicuous, *Euphorbia obesa* (Living Baseballs) are blooming in profusion. Next, we see over a dozen *Mam. pectinata*—one of our finest Mams, with their large whitish-pink flowers. In a pot nearby, there is a honey bee trying to get into one of the small ruby-red flowers of *Mam. bravoae.* This is a beautiful white, ball-shaped, short spined, three-inch plant that never fails to blossom at this time of year.The next two beds down the aisle consist of *Mam. elongata* and *Rebutia violaciflora*—small whitish flowers on the golden stars and brilliant large violet-red flowers on the violet Tom Thumbs. Next—comes our old standby, *Rebutia minuscula* (Red Crown Cactus), with the fine red flowers covering each plant. On the left in the succulent bed, is a group of *Dudleya arizonica* (Chalk Lettuce), with tall spikes of golden star-like flowers. Coming to section two of aisle one, we see the most beautiful flower of the entire cactus family—the brilliant purple-rose, three-inch blooms of *Opuntia basilaris major,* the familiar Beaver Tail cactus of our central Arizona deserts. Nothing can compare to the brilliant hue and waxy lustre of these wonderful flowers. They stand erect at the tops of the pads and in the sunshine, the gold colored pollen contrasting beautifully with the bright purple-rose of the petals. Continuing on down, we come to a small bed of *Mam. hamilton hoytae* (Snow on the Rockies); these plants have been blooming for some time now with bright violet-red flowers and the top of the plant seems to be covered with white snow at blooming time. Further on, we come to our large bed of good old *Astrophytum myriostigma* (Bishop's Cap) in all its shapes and sizes. For the past three weeks we have had the large yellow flowers coming out nearly every day. The Bishop's Cap will always be one of our favorites.

Although not all of our different varieties of cacti are in bloom now, we do see buds on a great many which will be blooming within the two to four weeks. Some of these are *Echinocereus gonacanthus* (just ready to pop), *Echinocereus reichenbachii, Notocactus submammulosus, N. apricus, Coryphantha recurvata, Opuntia erinacea, Acanthocalycium violaceum, Echinopsis, Echinocereus bonkerae, E. robustus, E. rigidissimus, Lobivia binghamiana, Cleistocactus strausii* and many others.

Going on down the aisle, we see *Ferocactus uncinatus* with its fine blooms and next to it, a group of *Strombocactus disciformis* starting to bloom. One of these is a crest about four inches across. Today it has twelve whitish flowers in full bloom clear across the crest and is a beautiful sight to see.

Turning the corner and going up aisle one, we come to a fine imported plant of *Mam. tolimenensis* in full bloom. The ruby-red bashful-like flowers of this cactus seem to come out on the larger plants (three inches or over), and on these, there are at least seven or eight flowers in a circle on the top of each plant. *Echinocereus viridiflorus,* the plant with the different flowers, is in bloom today with a sort of sienna flower while others may have a greenish flower. *Mam. perbella lanata* (The Jewel Pin Cushion), is still blooming freely with many striped flowers. *Mam. elegans* also is still blooming wonderfully. The bed of *Mam. hemispherica* has hundreds of salmon-white flowers which show off very pretty in conjunction with the bright red seed pods. *Mam. werdermanniana* has some of the brightest red blooms that I have ever seen on a Mammillaria and the flowers of this plant are not bashful at all as they open wide during the mid-day sun. Some of the unnamed Coryphanthas and Mammillarias are blooming today and further on up the aisle, we come to the very graceful *Mam. longicoma* with fine salmon-white flowers. Judging from the large buds seen on our various Echinopsis types, we figure we will have at least one hundred and fifty large Easter Lily flowers within the next thirty days—both pink and white.

Really wonderful, are the seven beautiful

FIG. 55. *Lobivia* with 52 open flowers. V. J. Seager had 102 flowers in one week on this plant.

blossoms opened today at noon on a very fine cactus — *Lobivia rapidacantha.* It is a free bloomer with very large pale violet-red blossoms, almost approaching the size of the Easter Lily to which it is closely related. The long, soft graceful spines on this plant make it very picturesque indeed.

Going down on aisle three, we came to a large bed of Giant Pin Cushions—*Mam. heyderi* var. *macdougalii,* sometimes called the Cream Cactus. The cream-yellow flowers are among the largest in the Mam. group. Further on down, we come to more plants in blossom—too many to name. I wish all of you could actually be with us on this walk this morning.

In May and June, we will have many of the Gymnocalyciums (Chin Cactus), *Mam. microcarpa,* various Echinocerei, Opuntias, *Astrophytum asterias* and many, many others in bloom. Will write about them in a later issue.

Oh yes, *Thelocactus fossulatus* has come out with a very beautiful bloom, with more buds coming. It is very strange how some plants will bloom the very first year they are planted—while others, due to the long period of adjustment needed, will not bloom until the second or third year of their new location. We have been very busy at this time of the year, transplanting the crowded beds into larger quarters, making cuts, rooting the winter dried cuts of the larger Cerei, and spraying the plants.

Spring also brings the age-old problem of pulling up weeds that are growing in among the plants. In most gardens, weeding is not too much of a problem; but with cactophiles, it is not the easiest thing in the world to stick your hand in between the thorny plants to clean out grass and weeds. However, it must be done or the cactus garden will not be a very neat affair. We use several different gadgets—one is the long, narrow hand-spade to loosen the roots of the weeds, long tweezers, kitchen tongs, and of course—fingers.

Now is the time of year everyone should be planting, transplanting, watering and acquiring new plants. I do hope everyone is as happy doing this as I am.

EDITOR'S NOTE: Mr. Mastrangel is taking an extensive trip during June and July. If you should not be able to contact him, you will find him "at home" in August.

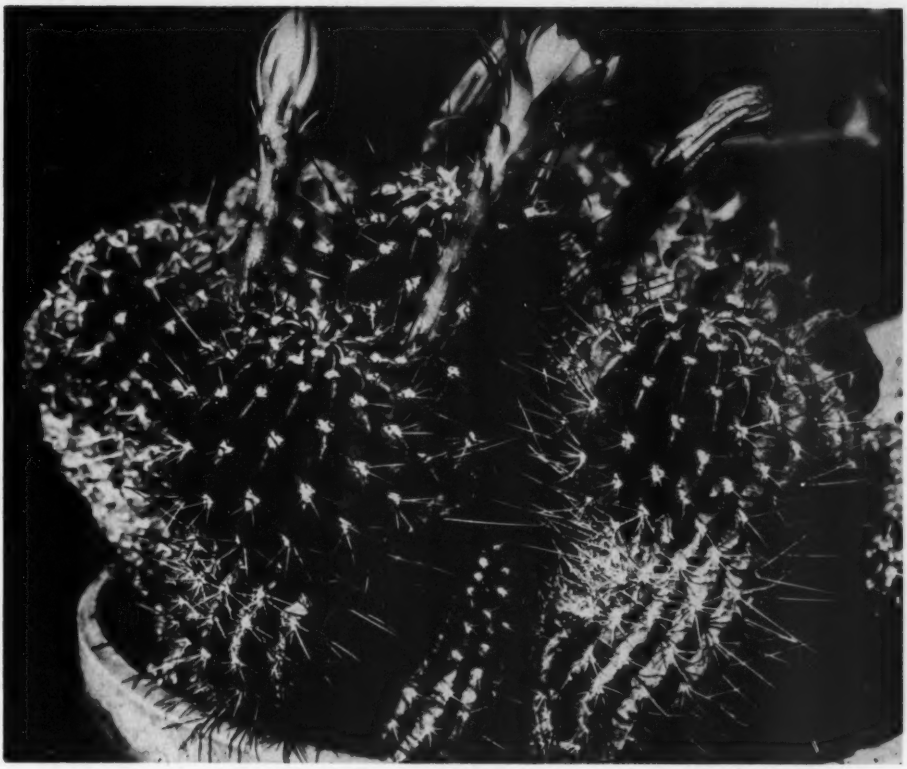

FIG. 56. *Lobivia westii* P. C. Hutchison, photograph of the living type plant (clonotype) growing at the University of California Botanical Garden, Berkeley.

STUDIES OF SOUTH AMERICAN CACTACEAE

4. *Lobivia westii*, a New Species from Dept. Apurimac, Peru.

By P. C. HUTCHISON[1]

Lobivia westii P. C. Hutchison, sp. nov. *Planta caespitosa caulibus elongatis diam. ad 6 cm. 15-20 cm. longis costis 16-18 crenatis acutis spinis radialibus plerumque 8 subaequaliter radiantibus adpressis vel suberectis 3-9 mm. longis spina centrali unica rare duabus primo ad 2.5 cm. demum leviter incurvata ad 4 cm. longa, floribus tubiformibus-campanulatis 6-7 cm. longis diam. 4 cm. tubo 4-4.5 cm. longo diam. medio 6 mm. squamis pluribus lanceolatis in quarum axillis tomento copioso instructis perianthii segmentibus cinnabarinis armeniacotinctis eis interioribus incurvatis vel conniventibus fulgente armeniacis marginibus carinisque flammeotinctis.*[2]

Plant caespitose, stems elongate, to 6 cm. diam., 15 to 20 cm. long, dark green, apex flattened or somewhat depressed, less spiny. Ribs 16 to 18, rarely somewhat spiralled, crenate, acute, 7 to 9 mm. wide at base, separated by grooves up to 9 mm. deep. Areoles yellow-felted fading to gray, up to 4 mm. by 2.5 mm. Spines straw-colored with brown tips or entirely brown fading to gray, radials usually 8, spreading sub-

[1]University of California Botanical Garden (Berkeley) Contribution Number 132.

[2]Latin diagnosis prepared through the courtesy of Dr. Rimo Bacikalupi, Curator, Jepson Herbarium, University of California, Berkeley.

equally, appressed to suberect, 3 to 9 mm. long, centrals 1, rarely 2, on younger growth up to 2.5 cm. long, later to 4.0 cm., slightly incurved, second central if present much shorter. Flowers subapical, lateral, solitary, tubiform-campanulate, 6 to 7 cm. long, 4 cm. diam. across limb, tube at first gray-brown or brownish purple, later reddish purple, 4 to 4.5 cm. long, 6 mm. diam. at the middle, with a slightly swollen base 8 to 9 mm. diam., with brown, green-tipped, lanceolate scales 2.5 mm. long with abundant gray wool in axils. Perianth segments orange, orange-yellow or orange-red tinged yellow. Outer segments lanceolate, recurved, waxy orange-pink shading to golden orange, 2 to 3 mm. wide, 18 mm. long; iner segments oblong-ovate, acute, apex entire or jagged, keeled, bright golden orange shaded on margins and keel with orange-red, incurved, 5 mm. wide, 3 cm. long. Stamens biseriate, filaments incurved, adnate part white, free part yellow, upper series inserted at tube apex, lower 3 to 4 mm. adnate, upper 8 mm. free, lower series inserted from 1 cm. above ovary to within 0.5 cm. of tube apex, 2 cm. long, clasping style. Style 3.5 cm. long, white below, pale yellow above, stigma lobes 6, 2 to 4 mm. long, pale yellow. Fruit and seed unknown.

Peru, Dept. Apurimac, Ccoripacchi on the trail from Andahuaylas to Argonia, Nov. 5, 1935, James West 3741, *ex hort. University of California Botanical Garden No. 36.1751* (UC-Holotype). The field-collected specimen of flowers only (*West 3741*) is also deposited at UC. I have seen additional living material of this species, colected by Harry Johnson at Andahuaylas, in the Johnson collection at Paramount, California.

Associated with *Opuntia floccosa* Salm-Dyck and an "Echinocactus sp." (probably an *Echinopsis* sp.) in open puna in a grassy area with occasional shrubs at an altitude of about 3800 meters. Locally known as "pakunquis."

West collected both living plants and a unicate herbarium specimen but since the latter is fragmentary, material prepared from the living specimen at this botanical garden has been designated as the holotype. Additional specimens will eventually be made available to other herbaria from the living type plant and these

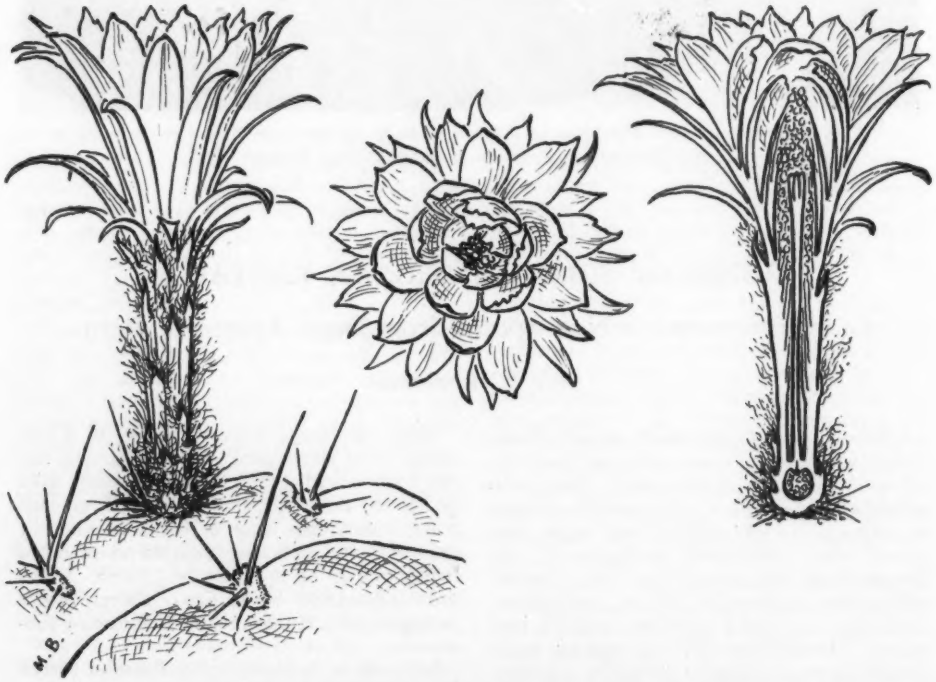

FIG. 57. *Lobivia westii* P. C. Hutchison. Left: Young apical ribs showing flower, side view. Center: Flower, apical view, with inner segments almost connivent. Right: Longitudinal section of flower. All natural size. Line drawing by M. Blos.

specimens will be designated clonotypes.[3]

Incurved to connivent inner perianth segments place this new species in subgenus *Eulobivia* Backeberg (1). Backeberg (2) states that in this subgenus "The flowers do not close until they wither." His meaning is not exactly clear. The flowers of *L. westii* remain fully open only a few hours each morning for two days. Before noon the inner segments become connivent over the style. The second day the flower color darkens considerably and a withering flower gradually turns dark red. Attempts to set fruit on this species have failed over a period of three years, both in attempted selfing and in crosses with other species of *Lobivia* in cultivation here.

James West was the name adopted by Egon Victor Moritz Karl Maria, Prince of Ratibor and Corvey, Prince of Hohenlohe-Schillingsfürst, during his long stay in this country. West became known in the San Francisco bay-area as an authority on succulent plants and he designed many rock gardens in that area as well as the original cactus and succulent area of this botanical garden. His early writings in the Cactus and Succulent Journal of America are models of prose which few have excelled. In all his writings his detailed knowledge of the pertinent botanical literature and of the horticulture of succulent plants is clearly evident.

From 1935 to 1937 West acted as a collector for the First University of California Botanical Garden Expedition to the Andes and he collected some 4000 numbers principally in Peru, Bolivia, Argentina and Chile but also in Mexico, Central America, Paraguay and Ecuador. In many instances he collected living material which has subsequently been grown here. His comprehensive field notes, excellent photographs and the detailed comments in his letters confirm other evidences of his broad botanical background. His extensive collections of Cactaceae, in particular, are extremely noteworthy, since no collection of equivalent size is known to me which is so thoroughly documented, especially in terms of data on habitat, associated species, morphology and variation.

[3]The term "clonotype" is here proposed to apply to an herbarium specimen prepared from the same plant which the holotype was prepared or to herbarium specimens prepared from members of a clone which was vegetatively reproduced from the plant from which the holotype was prepared. When no holotype has been prepared or designated the term "clonotype" may be applied to herbarium specimens prepared from a plant on which a description has been primarily based. The term may be applied to a living plant in cultivation if herbarium specimens prepared from it are "clonotypes."

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2. Backeberg, C. Some Results of Twenty Years of Cactus Research, *Cact. & Succ. Jour. Amer.* 23 (2): *50, 1950.*

ROUND ROBINS

It is good to hear from the Round Robins once more and we have been promised regular notes from now on. If you are interested in joining the Robin on Succulents Only, please write to Mrs. Howard Karr, R.R., Iantha, Mo.

SUCCULENTS ONLY R. R. No. 1

Succulent Only. Round Robin No. 1 has only five members now and would welcome two or three more, especially persons interested in the Stapeliads, which are of special interest to all of our members. Rose White reported on the flowers of *Caralluma burchardii, Stapelia nobilis, S. pulchella, Huernia: levyi, schneideriana, barbata,* and the *Piaranthus* genus. She commented that the odor of the Stapelias is often held against them but that this usually disappears after the first day of being fully open. While flies do lay eggs on the flowers, the larva soon die. Frank Mark is particularly interested in crested plants and bemoaned the loss en route of several specimens he had imported from Japan, and by air-mail, too. Says they were probably too small to ship. Ella Nipper said she would soon have to top her eight-foot high *Euphorbia abyssinia,* as it will soon be too tall to live over the winter in her basement. It is a very difficult plant to root. Marjorie Wihtol was planning to do some hybridizing and has been studying the subject. Tentative crosses were: *Crassula-Sedum, Gasteria-Haworthia, Pachyphytum-Echeveria.* Mary Karr asked for information on *Stapelia namaquensis,* which may not even be spelled right. Is it a worth-while plant? A tiny slip of it has rooted. Margaret Johnson lost a number of plants in a freeze.

CACTUS AND SUCCULENTS R. R. No. 1

Our Robin has the distinction of having special letterheads, designed by one of the members, and we are quite proud of them. On its last trip, the Robin apparently "hibernated" as it was lost for nearly four months after Christmas, finally showing up without an envelope and with only a rubber band around it. Gladys Panis is much interested in Euphorbias because of their great diversity of shapes, and was happy with her recently acquired *E. pseudocactus.* Marian Fox has had trouble wintering plants in her trailer—mostly lack of enough light, but she also suspects her soil was too tight and has been adding more sand to her soil mixture. Mary Anderson reports reading that greenhouses are soon to be a thing of the past, because many plants do better under florescent light in a basement—would this work for cacti and succulents over winter? Ella Nipper had company when the Robin arrived and sent it on without writing. We miss her letter, as she is the best cactophile of us all and has much to tell of her plants. Marie Podgajsek is planning to spend this summer in Europe and will probably submerge her plants in soil and hope for the best. There was some discussion of how to flower *Echinopsis*—most agreed that they could take more water and richer soil during their growing season than other cacti, and one member mentioned that the hybrids are more free-flowering than the species. Mary Karr mentioned that her hardy cacti came through the winter in fine shape—the Opuntias are frantically adding new pads to their figures while the Echinocerei are budding and a *Pediocactus* has already flowered.

Recent Publications

PART II

CARDENAS, Martin 1952
"Notas Cactologicas de Bolivia. El Genero Corryocactus en Bolivia."
Revista de Agricultura (Cochabamba) No. 7: 1-13, 1952.

Corryocactus melanotrichus Schumann var. **caulescens** Cárdenas, var. nov.
Revista de Agricultura (Cochabamba) No. 7: 8, 1952.

Corryocactus ayopayanus Cárdenas, sp. nov.
Revista de Agricultura (Cochabamba) No. 7: 9; pl. opp. p. 8; fig. opp. p. 10; 1952.

Corryocactus perezianus Cárdenas, sp. nov.
Revista de Agricultura (Cochabamba) No. 7: 10; pl. opp. p. 9; fig. opp. p. 10; 1952.

Corryocactus tarijensis Cárdenas, sp. nov.
Revista de Agricultura (Cochabamba) No. 7: 11; pl. opp. p. 10; 1952.

CARDENAS, Martin 1952 [Sept.-Oct.]
"New Bolivian Cacti, III" [Part 1]
Cact. & Succ. Jour. Amer. 25 (5): 142-148, 1952.

Samaipaticereus Cárdenas, gen. nov.
Cact. & Succ. Jour. Amer. 24 (5): 141, 1952.

Samaipaticereus corroanus Cárdenas, sp. nov.
Cact. & Succ. Jour. Amer. 24 (5): 141, fig. 82-85, 1952.

Cleistocactus dependens Cárdenas, sp. nov.
Cact. & Succ. Jour. Amer. 24 (5): 143, fig. 86-88, 1952.

Cleistocactus brookei Cárdenas, sp. nov.
Cact. & Succ. Jour. Amer. 24 (5): 144, fig. 89-91, 1952.

Cleistocactus candelilla Cárdenas, sp. nov.
Cact. & Succ. Jour. Amer. 24 (5): 146, fig. 92-94, 1952.

Cleistocactus canedilla Cárdenas var. **pojoensis** Cárdenas, var. nov.
Cact. & Succ. Jour. Amer. 24 (5): 147, fig. 95, 1952.

Cleistocactus sucrensis Cárdenas, sp. nov.
Cact. & Succ. Jour. Amer. 24 (5): 148, fig. 96, 96a, 1952.

CARDENAS, Martin 1952 [Nov.-Dec.]
"New Bolivian Cacti, III" [Part 2]
Cact. & Succ. Jour. Amer. 24 (6): 182-185, 1952.

Cleistocactus buchtienii Backeberg var. **flavispinus** Cárdenas, var. nov.
Cact. & Succ. Jour. Amer. 24 (6): 182, fig. 122, 1952.

Cleistocactus parapetiensis Cárdenas, sp. nov.
Cact. & Succ. Jour. Amer. 24 (6): 182, fig. 123-125, 1952.

Lobivia caineana Cárdenas, sp. nov.
Cact. & Succ. Jour. Amer. 24 (6): 184, fig. 126-127, 1952.

CARDENAS, Martin 1952 [December]
"Notes on Southern Bolivian Cactaceae"
National Cact. & Succ. Jour. 7 (4): 75-76, 1952.

Tephrocactus chichensis Cárdenas, sp. nov.
National Cact. & Succ. Jour. 7 (4): 75, fig. & pl. p. 76, 1952.

Tephrocactus chichensis Cárdenas, var. **colchanus** Cárdenas, var. nov.
National Cact. & Succ. Jour. 7 (4): 75, fig. & pl. p. 76, 1952.

Tephrocactus cylindrarticulatus Cárdenas, sp. nov.
National Cact. & Succ. Jour. 7 (4): 75, fig. & pl. p. 76, 1952.

CARDENAS, Martin 1952 [December]
"Quelques Cactacées Nouvelles de Bolivie"
Cactus No. 34: 125-128, 1952.

Rhipsalis incachacana Cárdenas, sp. nov.
Cactus No. 34: 125, pl., 1952.

Acanthorhipsalis paranganiensis Cárdenas, sp. nov.
Cactus No. 34: 126, pl., 1952.

Acanthorhipsalis incahuasina Cárdenas, sp. nov.
Cactus No. 34: 127, pl., 1952.

Opuntia ipatiana Cárdenas, sp. nov.
Cactus No. 34: 127, pl. p. 128, 1952.

CARDENAS, Martin 1953 [November]
"The Pasacanoid Trichocerei of South America"
Fuaux Herbarium Bulletin, pt. 5: 6-25, 1953.

Trichocereus poco Backeberg var. **fricianus** Cárdenas, var. nov.
Fuaux Herb. Bull., pt. 5: 11, 1953.

Trichocereus poco Backeberg var. **albiflorus** Cárdenas, var. nov.
Fuaux Herb. Bull., pt. 5: 12, 1953.

Trichocereus orurensis Cárdenas, sp. nov.
Fuaux Herb. Bull., pt. 5: 13, fig. 3, 1953.

Trichocereus orurensis Cárdenas var. **albiflorus** Cárdenas, var. nov.
Fuaux Herb. Bull., pt. 5: 16, fig. 4, 7b, 1953.

Trichocereus antezanae Cárdenas, sp. nov.
Fuaux Herb. Bull., pt. 5: 16, fig. 5, 7a, 1953.

Trichocereus herzogianus Cárdenas, sp. nov.
Fuaux Herb. Bull., pt. 5: 19, fig. 6, 7, 1953.
Trichocereus herzogianus Cárdenas var. **totorensis** Cárdenas, var. nov.
Fuaux Herb. Bull., pt. 5: 21, fig. 9, 1953.
Trichocereus conaconensis Cárdenas, sp. nov.
Fuaux Herb. Bull., pt. 5:24, fig. 10, 1953.
Trichocereus narvaecensis Cárdenas, sp. nov.
Fuaux Herb. Bull., pt. 5: 25, fig. 9, 1953.

(*To be continued*)

MORPHOLOGY OF CACTUS GENERA

2. Bartschella

By FRANZ BUXBAUM, *Judenburg, Austria*

Edited by E. B. KURTZ, Department of Botany and Range Ecology, University of Arizona.

This monotypic genus was separated from *Mammillaria* by Britton and Rose on the basis of the dry circumscissile fruit, not on the basis of the large flower and black seed as Marshall and Bock state (4). In any event, according to Buxbaum's polyphyletic scheme of the old genus *Mammillaria, Bartschella* belongs to the second branch of Tribe Euechinocactineae, Linea Neobesseya (2). According to this scheme, *Bartschella* is very closely related to the new genus *Ebnerella* but differs from this genus because of the dry circumscissile fruit. We must assume that *Bartschella* is a descendant of the primitive ancestors of *Ebnerella,* Subtribe Archiebnerella. The following discussion of the morphology of *Bartschella* will perhaps clarify the various phylogenetic positions given to this genus.

The root is branched with a rather small rapiform taproot which is derived from the primary root, hypocotyl, and enlarged lateral roots.

The seedling is very succulent, nearly globular, and possesses very reduced cotyledons. During the first year's growth the areoles only develop about ten spreading radial spines which resemble the feather-like spines of *Ebnerella* (*Mammillaria*) *plumosa.* During later growth straight to hooked central spines develop which have a pubverulent surface. Spines with a powdery surace also occur in most species of *Ebnerella,* thus indicating a close relationship even in the seedling stage.

The fully developed plant is caespitose with basitonic branching (see 1), the whole tending to form large clusters. The stems are globose to short cylindrical (Fig. 1). The relatively large, blunt tubercles are very closely set, but they are not joined into ribs, as in *Ebnerella.* The basal part of each tubercle is flattened by the adjacent tubercle. The sap is watery. The axils are woolly and without any bristles or hairs (Fig. 2). The round woolly areoles generally bear one, rarely three, central spines, and nine to fifteen spreading radial spines. If there is only one central spine it may be straight or hooked, but if there are three central spines the lowest one is always hooked. The three uppermost radial spines are slightly longer than the others (Fig. 3). This probably indicates that these spines are not of the same origin as the others. It is likely that the three upper radial spines and the central spines are primary spines, whereas the shorter radial spines are secondary spines. This maner of development was observed in *Pseudomammillaria* (*Mammillaria*) *decipiens.*

The large rose-colored flowers (Fig. 4) arise rather abundantly from the axils near the top of the stem. The pericarpel (see 3) is nearly hidden in the axillary wool. The pericarpel, and also the pedicellar zone (the part of the flower

FIG. 58
1. Plant of *Bartschella schumannii* (from page 58, The Cactaceae by Britton and Rose).

axis below the ovary hole), are naked since all foliar organs of the flowers are displaced to above the pericarpel. The upper part of the pericarpel is only slightly grooved by the decurrent bases of the lowest perianth leaves. A little above the base of the pericarpel there is a distinct constriction which is the point at which the mature fruit dehisces by circumscission.

The receptacle (flower tube) is funnelform. It is completely petaloid since all the foliar organs are petaloid, the lowest ones with a somewhat serrate or ciliate margin (Fig. 4). The large perianth leaves are broadly lanceolate and acuminate. At anthesis the perianth spreads

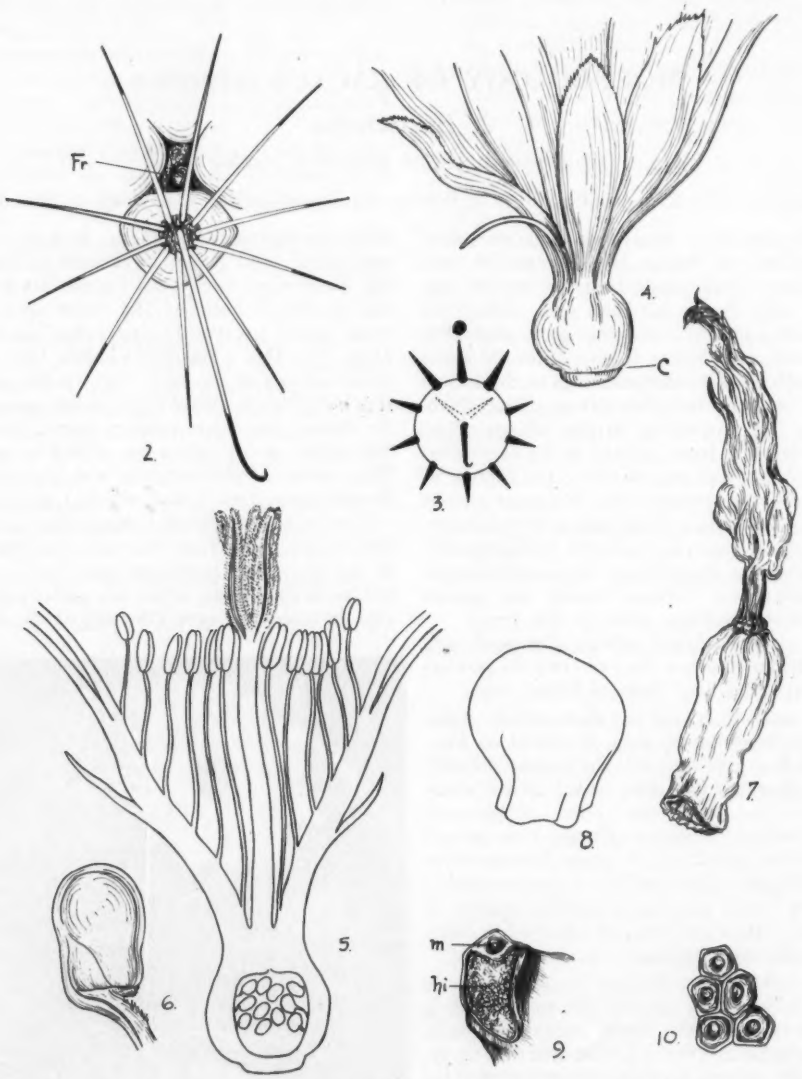

FIG. 59

2. Top of a tubercle of *B. schumannii* with the areole. The dry basal remnant of the fruit (Fr) is seen in the woolly axil. 3. Diagram of an areole of *B. schumannii*. The rarely developed straight upper central spines are indicated. 4. Basal region of the flower of *B. schumannii* to show the constriction (C) of the pericarpel. 5. Longitudinal section of the flower of *B. schumannii*. 6. Ovule of *B. schumannii*. 7. Mature fruit and flower remnant of *B. schumannii*. 8. Seed shape of *B. schumannii*. 9. Detail of hilum (hi) and micropyle (m) of *B. schumannii*. 10. Pitted testa cells of *B. schumannii*.

a little above the throat of the receptacle (Fig. 5).

A longitudinal section of the flower shows that the whole inner surface of the receptacle is covered with numerous stamens arranged in about six ranks. The lowest stamens are inserted in the base of the tube such that there is only a small nectar furrow. The filaments of the ranks of stamens become progressively shorter with the result that most of the anthers are in the same plane. The filaments of all the stamens are somewhat turned spirally around the pistil, just as in the flower of *Dolichothele*. The uppermost row of stamens is inserted just at the margin of the receptacle. This row of stamens differs from the others by protruding slightly above the others and by having smaller anthers.

The stigma is five to six lobed, each lobe being densely covered with long papillae on both the inner and outer surface with the exception of a small median stripe on the outer surface. Just as in *Porfiria,* the ovary hole is large since the pericarpel is of greater diameter than the receptacle. Ovules occur only in the upper three-fourths of the ovary hole. The ovules are elongated (Fig. 6) and the outer integument envelops the ovule with a broad margin. The funiculi are simple, rather short, and somewhat fimbriate near the micropyle. The micropyle prortrudes, as in the case of most Cactaceae.

The immature fruit resembles a berry, which is characteristic of the other genera of the *Mammillaria*-stage of development (2). However, the mature fruit is dry and breaks off by circumscission just above the flower base. This is similar to the mode of fruit drop in *Rebutia.* The dry basal remnant is readily seen in the old axils (Fig. 2). The seeds are inserted in the ovary by short dry funiculi. The dry remnant of the flower persists on the fruit (Fig. 7).

The mature seed is black and resembles the seeds of most species of *Ebnerella.* They are globular with a constricted, basal, cylindrical region (Fig. 8). The hilum is an elongated triangle, somewhat depressed, and white. The micropyle is very distinct and close to the hilum (Fig. 9). The black testa is pitted, the pits being surrounded by the rather swollen outer cell walls of the testa (Fig. 10). The seed possesses a very succulent embryo but no perisperm. Thus the seed of *Bartschella* substantiates the phylogenetic position of this genus (2).

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2. ———. Stages and Lines of Evolution of the Tribe Euechinocactineae, *Cactus Succ. J. Amer.* 23: 193-197. 1951.
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4. Marshall, W. Taylor and T. M. Bock. *Cactaceae,* Abbey Garden Press, Pasadena. 1941.

MEXICO

I thought that you would like to know a few of the things I saw during my trip last month to Sonora and northern Sinaloa.

Mexico was entered at Nogales and the country from there to Guaymas on the Gulf of California is similar to Arizona. At Guaymas, the rocky mountains are right on the coast and provide a habitat for many cacti and succulents. At a point north of Guaymas (San Carlos Bay) I noted two large Cereus, *Lemaireocereus thurberi* and *Pachycereus pecten-arboriginum,* one of the latter growing in the bay along with the mangroves. There were two species of Opuntias, one similar to *O. santa-rita.* The two Mammillarias growing there, one had hooked spines and the other had straight spines. One Ferocactus was 16 feet tall. There was a small marbled Agave and a species of Bromeliaceae which looked like a Hechtia.

Most of the coastal plain south of Guaymas is covered with a varying growth of *Lemaireocereus* with a few taller Cerei. There is a lower growth of *Lophocereus schottii, Rathbunia* and two species of *Opuntia* with cylindrical joints.

The large towns south of Guaymas are located in the river bottoms where there is some farming. The towns are similar to California towns with glass-front stores and modern gas stations. Most of the river bottoms are planted to cotton and farther south sugar cane. In some areas the original vegetation is still present. In the valley of the Rio Fuerte, north of Los Mochis in Sinaloa I noted Cereus, Opuntias, and Agaves. The shrubs had small Tillandsias growing in their branches.

A trip was made into the mountains to the old mining towns of Alamos. I hoped this area would be rich in cacti but it is covered with a thick growth of trees and brush with a few tree Cereus, Opuntias, and here and there were small dark spined Mammillarias.

Between Alamos and the main highway at Navojoa are many rocky hills which in some places have large stands of a tall Cereus similar to the Sahuaro of Arizona. A few points for others who might be planning to visit this are as follows: I traveled with extra gas, oil, heavy ply tires, and camped out. However, for tourists the road is paved from the border to a point 100 miles south of Navojoa and it was being rapidly paved further south and may be paved way to Mexico City by this time. There are good accommodations at Hermosillo and at Guaymas and fair at Ciudad Obregon, Alamos and Los Mochis. Gas is plentiful but there is usually only one gas station in each town and none between. There is little trouble in crossing the border. The entire area holds little interst for the average tourist except fishermen and succulent fans.

T. GASKIN
Larkspur, California.

NOTICE TO THE AFFILIATES

Are you looking for program material? There are now four sets of 100 35mm. colored slides available to the Affiliates.

Set. No. 1—California Cacti.

Set No. 2—Baja California, South America and Mexican plants.

Set No. 3—Orchid Cacti and Miscellaneous succulents.

Set No. 4—Orchid Cacti.

Set No. 4 was donated to us by Mr. and Mrs. S. E. Beahm of Beahm's Epiphyllum Gardens, Pasadena, California.

Any Affiliate interested in borrowing any one set at a time, may do so by sending me a $5.00 deposit.

MARY GLADE, *Corresponding Secy.*
7600 Verdugo Crestline Drive
Tujunga, California

QUESTIONS and ANSWERS

Conducted by
HARRY JOHNSON
Paramount, Calif.

Question: Your gardens are among the most pest and disease free I have ever seen. Could you tell us how you do it and give a suggested schedule of preventive measures for plants grown under a variety of conditions. What is your opinion on soil sterilization? Hope I am not asking trade secrets! R. H. Gardner, California.

Answer: The first thing to do in insect control is to identify the insect causing the trouble. There are not a great many kinds of pests attacking cacti or succulents so identification is seldom difficult. It probably would be well to give a short description of the ones most likely to cause trouble in the small collection. Spine Mealy Bug. This is one of the more common ones. If not checked they soon sap the strength of a plant. The insect itself is a tiny lens-shaped, lead colored bug generally found feeding, by sucking the plant juices, near the apex of the plant. They are seldom noticed. The obvious sign is a white woolly ball near the ends of the spines which when squashed show a purplish viscid content. These are the pupae. They attack only cacti.

Common Mealy Bug. The common bug attacks almost all kinds of house plants generally feeding near the tender growing tips or flower buds. White cottony masses, pinkish within, may be found webbed between the leaves. The insects are less than an eighth of an inch long, powdery white with a faint distinctive odor. They breed rapidly. It is mostly found on succulents but in the house where growth is soft may be found on many cacti also.

Cactus Scale. This used to be very common but is much less so now. It generally attacks the older parts of plants. I found it on wild plants in Peru. The insect when seen on the plant is a small circular, raised dot a sixteenth of an inch across, white in color. When the infestation is bad it appears as a white scurf over an area, sometimes almost covering a plant. It does not seem to bother succulents. There are several kinds of scale insects found on both cacti and succulents but all except one are easily controlled by the same treatment. The exception is one found on Euphorbias which is scarce but very resistant.

Root Mealy Bug. Since this is seldom seen except when a plant is shifted from its pot only the confirmed cactophile would be likely to know of it. It is persistent and annoying but unless the infestation is intense seldom kills the plant though definitely retarding it. If a plant is tipped out of its pot the ball and sides of the pot will have whitish patches if the insect is present.

Red Spider. This is liable to attack cacti and succulents at any time for it also attacks all kinds of garden and house plants particularly when the atmosphere is dry. Thus may be expected even on clean plants. If your plants gradually assume a silvery, peppered look watch out. When the bugs are working there is a gossamer web over the plant. The insects are very tiny red specks. If you run your finger over them there is a tiny red smear. Damage to plants appears as a silvery grey area sometimes almost covering the plant where the insect has destroyed the tissue just below the cuticle. Both cacti and succulents are attacked.

Thrips. The damage is somewhat similar to that caused by Red Spider. The insect is a tiny, black, elongated speck, very agile and hard to see. Damage to tissue is the only obvious sign of their presence. They also attack all kinds of garden and house plants generally in late spring probably because they build up to immense numbers on lush spring growth. Found on both cacti and succulents.

Aphis or Plant Lice. These are common everywhere on garden and house plants. They don't usually bother cacti, but are frequent on leafy succulents such as Cotyledon. They are small, fat, green bugs generally found thickly clustered on young growth.

This covers the more common pests to be found on small indoor collections and outdoor gardens. Large outdoor collections may run into other local troubles particulaarly if there are wild cacti in the vicinity.

I have found two types of sprays to be effective. Oil sprays are most effective for Mealy Bugs and Scale the two hardest to eradicate. Rotenone and Pyrethrum sprays are quite effective for Thrips and Aphis and are useful on Scale and Mealy Bug particularly when a "spreader" is used which increases the adhesiveness and peneration.

Actually in practice I use oil and rotenone together. The oil acts as a spreader. By combining an oil spray such as Volck with rotenone such as Red Arrow you are very sure to get a kill. We use Volck at about 1 part to 200 then add a tablespoon of Red Arrow to each gallon of water. Much of the effectiveness of sprays is contingent on the thoroughness with which the plants are covered. It can be applied with a

small hand spray or the plants may be dipped. I would advise two sprayings about a month apart to catch any hatched after the first spraying. Scale insects are persistent so keep watch on infected plants for recurrence. A week after the first spraying wash the plants by laying them on their sides using a solid jet of water to knock the dead scale off. This may uncover egg masses or those missed.

Red Spider is easily controlled by dusting with plain sulphur on a warm day. The sulphur fumes kill them promptly. If sulphur is used on a very hot day with little air movement you could burn such tender plants as Echeveria. Normally this would never happen.

Root Mealy Bug may be controlled by soaking the pots and ball of roots in a 1 part to 50 solution of rotenone or pyrethrum spray. This should be done only when the plants can be thoroughly aired and dried to prevent the wetness rotting the plants.

Oil sprays should not be used too often for they clog the stoma or breathing pores which all plants must keep functioning. Actually one does not see much difference when repeated sprayings are given but the theory is good. Plants with white bloom or powder on the surface such as Powder Blue Cereus, etc., will lose the bloom and become green after oil spraying. This is very true of the powdery white succulents so only use the oil spray on them as a last resort. Since pests are most active in breeding early in spring a good spring spraying is indicated as a deterent, even on clean plants, to check any outbreak. It is also wise to spray the bench or shelf on which the plants are setting as Mealy Bug often hibernate in cracks, under pots or on the underside of the shelf. If it is outside it is good to paint all bench surfaces with old oil from crankcare drainings. It will sink in in a few days and not be too messy. It surely discourages bugs!

Ants should be controlled at all times as they are the medium by which Mealy Bug, Aphis and Scale are carried around. Ants are very fond of the "honey dew" or sweet excretion which the bugs exude when the ants stroke them so they are always planting them on likely plants. The best control is dusting once a month with Chlordane which may be purchased at nursery or seed stores.

There are new sprays which are extremely lethal to some types of insects, notably Mealy Bugs, but which are also dangerous to use. Some very new forms, as Malathon, are much less toxic to humans. Though I use Parathion which is deadly to bugs it is so dangerous to apply (it will kill you as quick as the bug!) that under no circumstances would I advise anyone not thoroughly equipped to use it. Its great point is the complete coverage given as it also acts as a systematic poison killing bugs even though it may not touch them. At 300 pounds pressure with a small nozzle the spray is atomized and floats in the air covering all surfaces of a plant and insuring an almost 100% kill.

Soil Sterilization. This is necessary for potting soil in most areas. Some parts of the country may be free of nematode. However, this pernicious pest is very widely spread and since it is so harmful it is much safer to sterilize than be sorry. We cook our own soils at 175 degrees for 5 hours since we sterilize the soil in the flat. Smaller quantities may be put in bread tins and moistened and then put in the oven and baked until the soil in the center is hot. 120 degrees will kill nematode but where it is encysted in an old root-knot it may take the heat some time to penetrate. Moist heat is much more effective than dry heat so be sure to moisten the soil. One hears all sorts of arguments about killing soil bacteria and the effect it will have on the plant. Without going into this I will state that I have never had any such trouble after growing several million plants in sterilized soil.

Question: How does one repot Baby Toes (Fenestraria). I have had one for two years in the same tiny pot. It is doing all right but I feel it might increase if put into a larger container. I once repoteed a Baby Toes and it promptly collapsed and died so I am afraid to touch this one! Edith Bestard, Arkansas.

Answer: The Baby Toes does not particularly resent being repotted. The trouble is due to another factor—lack of good circulation of air and too much water after disturbing the roots. You will not have losses if you choose a time in spring or after September when the weather is bright and dry to transplant. Do not disturb them during their resting period which with us occurs from late June to September. Use a soil about two-thirds or three-quarters clean, sharp sand. The sand used for canary bird grit is about right. Do not water heavily after repotting. We wait perhaps a week before watering. In fact waiting a week after repotting to water is standard practice for almost all cacti and succulents.

If you want this column continued, send your questions to Harry Johnson, Johnson Cactus Gardens, Paramount, California.

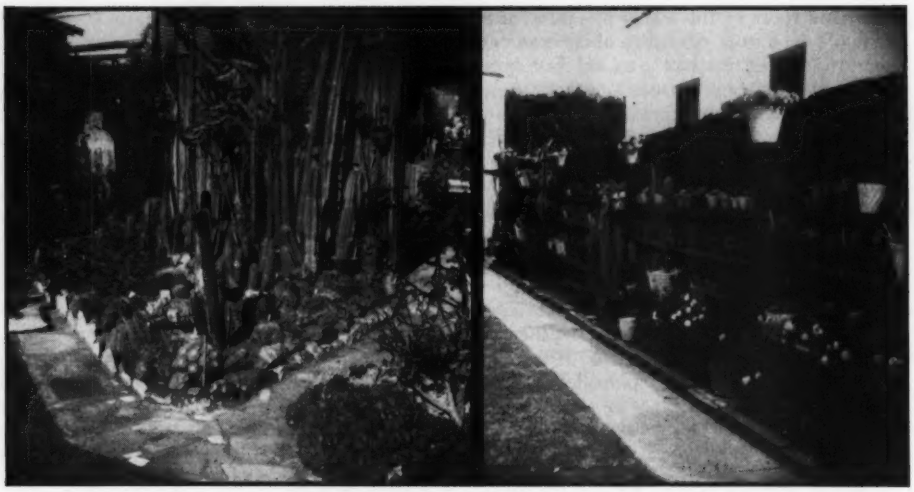


FIG. 60. Rockery of Charles Redler. Right: A fence is used to a good advantage.

LET'S VISIT AN AMATEUR'S COLLECTION

LADISLAUS CUTAK

Horticulturist, Missouri Botanical Garden

I have frequently brought to the readers' attention collections of cacti and other succulents in various parts of the United States as well as abroad. I'd like to continue these reports from time to time because I feel other cactophiles like to learn how the other fellow is operating, how he started his collection, what benefits are derived from the hobby and what success or failure is experienced.

Last summer, during my sojourn in California, I had the opportunity to visit a number of collections from Santa Barbara down to San Diego. Some of these belonged to commercial growers, others were professional jobs designed for private estates and a number were strictly amateur. To the last category belong the vast majority of CACTUS JOURNAL readers, who, regardless of the number of plants they own, probably derive more enjoyment from their hobby than the other two. Among one of these is Mr. Charles Redler of Los Angeles, who has a backyard collection that would be envied by many.

Practically every available nook in Charlie's yard is filled with cacti and succulents, except the little plot of grass which serves as a lawn. Even the branches of the low spreading tree near the center are repositories for epiphytes or air plants. Along the driveway there is a redwood fence with three rows of shelves extending the full length filled with potted cacti in either glazed or unglazed containers, including choice specimens of Mammillaria, Notocactus, Lobivia, Parodia and Echinocereus. In the border underneath succulents are planted right in the ground. To the left of the garage there is a raised rockery filled with many beautiful clusters of Echinopsis, Trichocereus and Cleistocactus. Some of these possess as many as 30 heads in one plant. Interspersed plantings include Sedum, Euphorbia, Stapelia, Pachyphytum and Mesembryanthemum. Several golden balls, *Echinocactus grusonii,* are scattered about in pots for Charlie has a particular yen for these golden spined barrels from Central Mexico. He's been instrumental in securing a number of these fine specimens for Mme. Ganna Walska in Santa Barbara, who has scores of them in various sizes planted around her magnificent home.

Next to the rockery is a boarded enclosure with shelves featuring hybrid epiphyllums to protect them from high winds. Blooming in July, at the time of my visit, were such good forms as "Agatha," "Hermosus," and "Pfersdorfii." The latter is an old favorite, a possible cross between *Epiphyllum crenatum* and *Selenicereus grandiflorus,* which produces a medium sized flower with narrow yellow sepals and broad white petals. Hermosus intrigued me with its broadly opened, rich colored flowers of violet

red. Relatively few stamens are produced in each blossom. The delicate pink flowers of Agatha possess an ethereal quality that is hard to beat. Its sepals are tinted in shades best described as apricot. Probably the greatest pest of Epiphyllums in California is the giant snail which will do considerable damage to the appearance of a plant. These gastropods forage at night and eat holes out of the juicy stems. I was amazed at the destruction they cause.

The inspection tour of the premises next disclosed a kind of glass shed where the very rare novelties and crests are housed, or such plants that need hospitalization. Also freshly grafted cacti are kept here until well established. In one pot a beautiful crest of *Epithelantha micromeris* far outshined its normal parent which looked so diminutive against it.

Several night blooming Cerei were producing large white flowers, among them *Nyctocereus serpentinus* being the most profuse bloomed. It is the most common species cultivated in California. The white flowers are quite showy and remain open late in the morning. They are about 8 inches long. Along the opposite fence, Selenicereus sprawled over supports, its snaky stems producing nocturnal flowers of elegant beauty.

Since I was making my headquarters with the Redlers during most of my stay I had many opportunities to photograph cacti in bloom, particularly such species that had failed to flower for me at home or new ones that were not in our collection. Charlie is also a good photographer and has taken hundreds of color slides which on two occasions were shown at meetings of the Henry Shaw Cactus Society and greatly enjoyed by the members. Redler was born in Australia and in his early boyhood wanted to be a forester but financial difficulties prevented him from fulfilling his dream. As he lived only a block from the botanical gardens in Vienna he made many visits there and presumably these visits whetted his appetite for plant life. The first cacti he laid eyes on were those housed in the greenhouses of Schönbrunn, recognized as the greatest of the imperial castles. This was the castle where my dad worked for awhile as he got his horticultural training in Europe.

Before Redler settled in his present job, that of professional gardener, he had tried his hand in lots of things to make a living. He was a sailor, a professional soccer player, bartender and dance hall operator. For two years he traveled extensively in the United States and Canada and finally got married. Then in 1930 he visited his homeland once more and spent considerable time at Schöbrunn admiring the cacti. These plants held a certain allure which many of us have experienced likewise. When the Redlers moved to California in 1938 and acquired a home of their own, Charlie began to collect cacti seriously and soon built up a commendable collection. His only lament at the present time is that his place cannot hold more of these intriguing plants. In the performance of his duties as gardener for several homes in the Beverly Hills district, Charlie wakes up very early in the morning and works late at his jobs, but sometimes manages to slip home around noon to see what is blooming in his own collection. On weekends, Ann and Charlie Redler visit friends who either operate cactus nurseries or who have their own private collections.

Confidentially, Charlie is very proud of his collection and loves to show it to cactophiles who are interested in these plants as much as he is. The collection is located at 8913 Ashcroft Avenue.

MY DIFFICULTIES WITH CRASSULA FALCATA

By E. ELKAN

(From England)

Crassula falcata is, of course, not a rare plant. I have seen small specimens at the local florists who, as a rule, does not venture beyond 'chrysants' and tomatoes, and I have also seen it as an ingredient of those 'cactus gardens' among Swiss Chalets and imitation coconut palms. What can a poor falcata do in such circumstances but die a speedy death? To grow to its full size it needs a well-sized flower pot and even then it does not seem to be quite happy here.

I have had a plant for three years. It grew and grew, putting out more and more of its long, velvety, sickle-shaped leaves and the textbooks said it would flower in the spring. For two years nothing happened at all, but this year a flower bud appeared. Not in the spring but in the early summer. To-day is Sept. 11th and now, at last, this plant is in full flower.

And how much trouble it gave me during these months of waiting. Healthy, strong plants—unless they are climbers—need no sticks and I have not heard that *C. falcata* is in the habit of climbing. But this plant, from the moment it started this flower bud, would no longer grow straight. The flower stalk, the longer it grew the more it curved, until in the end it nearly curled up on itself and looked like the crook of a walking stick. Not that I did not try to lead it back on the path of virtue. I turned it and turned it so that it should get the light from all sides. I took it out of the hothouse and put it on the lawn in case it needed the direct light of the sun. I gave it more water, I gave it less water, and if you think that any of these attempts made any impression on this plant you are mistaken. It straightened itself out a little during August, and at the beginning of September when the flowers started to open, it was 'nearly' straight.

There must be many members whose *C. falcata* have flowered, and what I should like to hear from them is: when did their plants flower? Did the flower stalk grow straight upwards? Did they turn towards the light or away from it? Did they ever get seed from this plant and does it fertilise itself, or is it self-sterile? And finally, under what conditions does this plant grow in its country of origin? With broad leaves and its weak central stem it looks to me as if the slightest wind would blow it over. Does it grow in high grass or among other vegetation or does it come from a country without wind?

PLANT OF THE MONTH

By HARRY JOHNSON

FIG. 61. *Gymnocalycium leeanum*

Gymnocalycium leeanum

Yellow Chin Cactus

The Chin Cacti are so called because of the chin-like tubercle on which the areoles are set. This one is quite pretty forming a low, biscuit-shaped plant up to three inches in diameter. Sometimes in winter, if the fall has been dry, the plants pull down flush with the soil so that you could walk on them without seeing them. Many cacti with tap roots have this characteristic which is also shared with the common dandelion.

The plants are dark green with 9 to 11 low, broad ridges each divided into 6-sided tubercles. The slightly woolly areoles have 5 to 9 radially spreading, flexible spines with perhaps one short central. The flowers are pale lemon yellow in color, about 1½ to 2 inches in diameter, and are produced in March and April. Young plants are formed around the mother and are joined to her by a fragile cord; each has its own set of roots and may easily be detached to give you exchange material.

The plants are easily grown and flowered. They like a sunny location and in spring and summer enjoy being put out of doors where they can receive direct sunlight. Direct sunlight is very beneficial for it is quite different than light that has passed through a window pane. A good loam soil is preferable, one through which water passes quickly. Generally, sand has to be added, together with some leaf-mold and charcoal. Water only when the soil is dry below. Don't water if it is at all moist.

* * *

Neoporteria subgibbosa

These Chilean plants are very free flowering. They come into bloom during March, April and May. The flowers are bright pink and there may be a dozen or more of them about ¾ of an inch across. The plants, with age, may reach 6 inches in diameter though 3-inch flowering plants are most commonly seen. They bear about 20 ridges with closely placed areoles each set above a chin. The areoles have some yellowish wool and about 24 short, stiff radial spines and 4 or 5 longer, stout, chestnut colored central spines. Their culture is of the simplest. An open porous soil and a well drained pot. They enjoy moderate watering and prefer a sunny, airy spot during summer, to thoroughly mature their growth and to assure plenty of flowers. In winter they may be kept quite cool. They have withstood temperatures of 20° without injury. Buds may form while frosts are still expected. After they are thoroughly established they will benefit from three or four yearly applications of weak liquid fertilizer. Until recent years they have been quite rare.

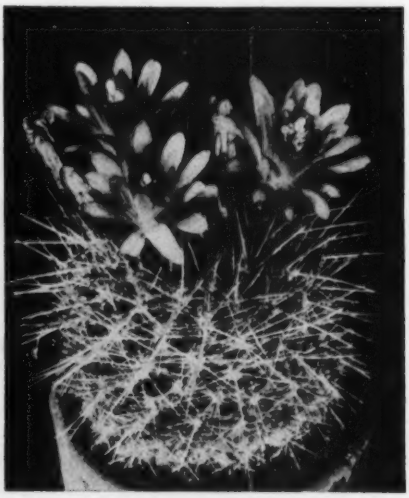


FIG. 62. *Neoporteria subgibbosa.*

Euphordia hallii from South Africa

By R. A. DYER

It would not be unnatural to look with some suspicion on the description of a "new species" of plant from what is regarded as a well botanized area. The recent recording of *Euphorbia hallii* R. A. Dyer in the Journal of South African Botany 19:135 (1953) is a case in point. Our new species occurs in a deep valley between Calvinia and Clanwilliam in the Cape Province. The valley is called Botterkloof due to the great abundance of *Cotyledon paniculate,* commonly known as "Botterboom" which means "butter tree." The area is rather desolate and high temperatures and a low annual rainfall are normal factors of the environment. A gravel road runs through the distribution area of *Euphorbia hallii* and thus one wonders why the species did not come to light much earlier.

The plant described in the Journal of South African Botany was first collected in 1948 and again in 1952 by Mr. H. Hall, a succulent plant enthusiast on the staff of the National Botanic Gardens, Kirstenbosch. Mr. P. A. B. van Breda, Officer in Charge of the Botany Research Station at Worcester in the Cape Province, discovered and collected the species independently in 1950. The present writer, however, who had seen the plant at Worcester failed to associate it with *E. hallii,* when actually describing the new species.

Mr. van Breda and the writer passed through Botterkloof last September on a sweltering hot day and took the accompanying photographs in the field. *E. hallii* is associated there with a wide range of other succulents, including several species of *Stapelieae* and *Cotyledons.*

The nearest affinity of *Euphorbia hallii* is with *E. monteiroi,* which occurs some considerable distance further north in South West Africa, the Transvaal and in Rhodesia. The tubercular stem is not unlike that of *E. restituta* N. E. Br., and one should refresh one's memory of this and *E. graveolens* in the "Succulent Euphorbieae" by White, Dyer and Sloane.

In the peculiar feature of producing several peduncles from a single flowering eye in successive seasons, it shows some relationship to the equally strange looking species, *E. schoenlandii* Pax. The red glands, ovary, style and filaments make it conspicuous when in flower. It is evident that the peduncles dry and persist for some time if allowed to do so, but plants in the wild state are mostly denuded either by the elements or, more likely, by worms and grazing animals.

The following is a description of the newly described species "*E. hallii*": A perennial succulent plant up to about 40 cm. tall with spreading thickened roots and only a few rootlets; main root 2-3 cm. thick and becoming thinner gradually, tough and fibrous with a soft pith. *Stem* simple or sparsely branched, thickened slightly from the base and becoming cylindric above, 3-4 cm. thick, tubercled; *branches* 1-2 cm. thick. *Tubercles* about 6-angled at base but not constant in shape, 1-2 cm. broad and long, uppermost part of margin variously indented and subtending old and young peduncles; young tubercles at the apex of stems producing linear-lanceolate, recurved, channelled *leaves* up to about 1 cm. long, which are early deciduous and leave a central scar on the tubercle. *Peduncles* from axil of tubercles, 1-several together with the younger ones produced from below the older ones in successive seasons; the first peduncle from a tubercle often sterile, bearing leaf-like bracts, drying with age and persisting for sometime but later disintegrating or being eaten off by worms or animals leaving bare stems. *Bracts* leaf-like, linear, up to 10 cm. long and 2-4 mm. broad, with sides folded up and recurved at tip, glaucous-green; bracts subtending the cyme, shorter 2-3, linear-lanceolate. *Cymes* with 1-3 bisexual cyathia; involucre up to 1 cm. diam., with 5 glands and 5 lobes: glands red, separate, about 0.3 mm. broad and with 3-5 branched processes 2-4 mm. long from the outer margin; lobes broadly ovate, 4 mm. long, 3 mm. broad, minutely ciliate. *Stamens* dark purple on exserted pedicels. *Ovary* small, on a gynophore 5-7 mm. long, exserted; ovules filling the ovary cells and attached at the apex within a small hood; styles dark red, united into a column 4.5 mm. long with branches about 3 mm. long and with small bifid tips; capsule about 7 mm. diam., obtusely trilobate; seeds ovate, angled, 5 mm. long, 3 mm. broad, rugose.

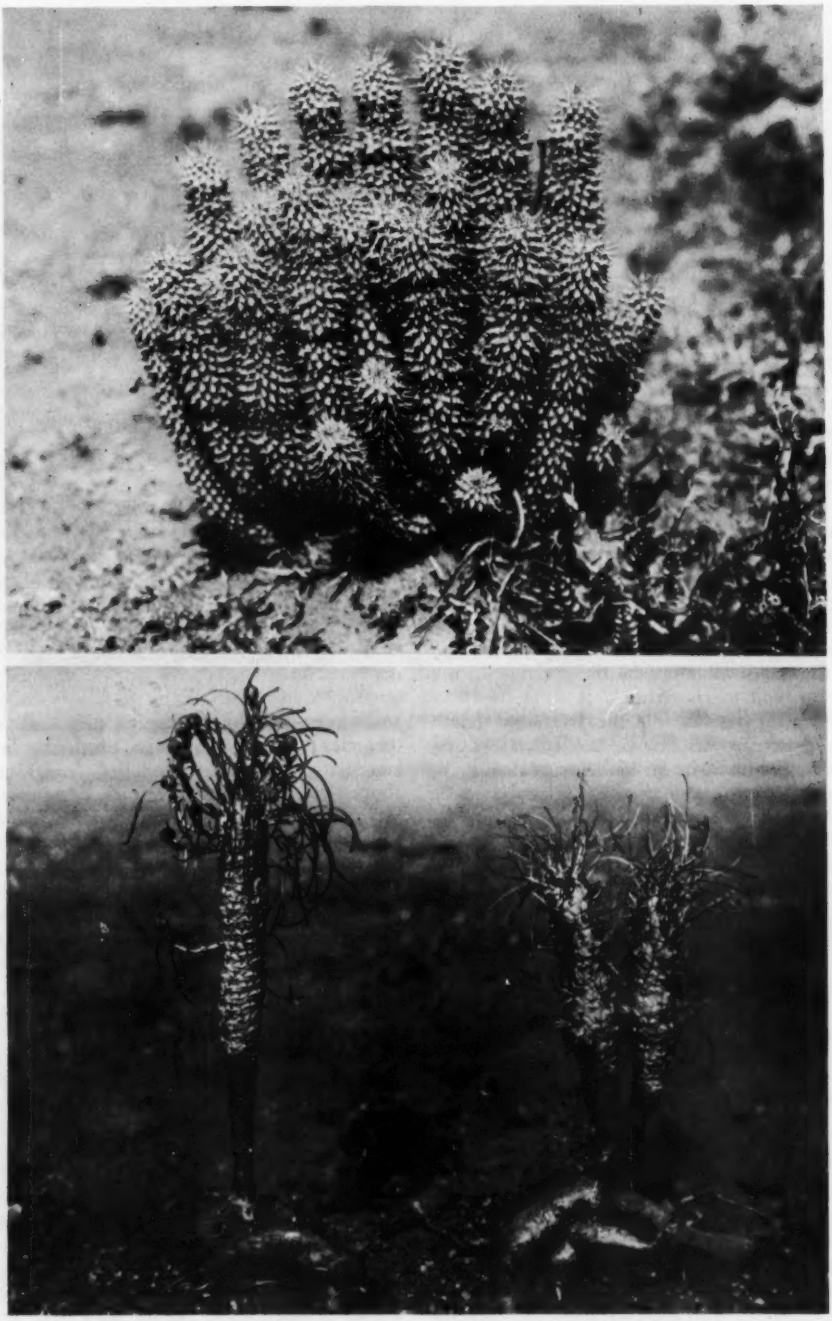


FIG. 63. Above: *Hoodia* sp. growing in Botterkloof with *Euphorbia hallii*. FIG. 64. Below: *Euphorbia hallii* (Dyer and van Breda No. 5434).

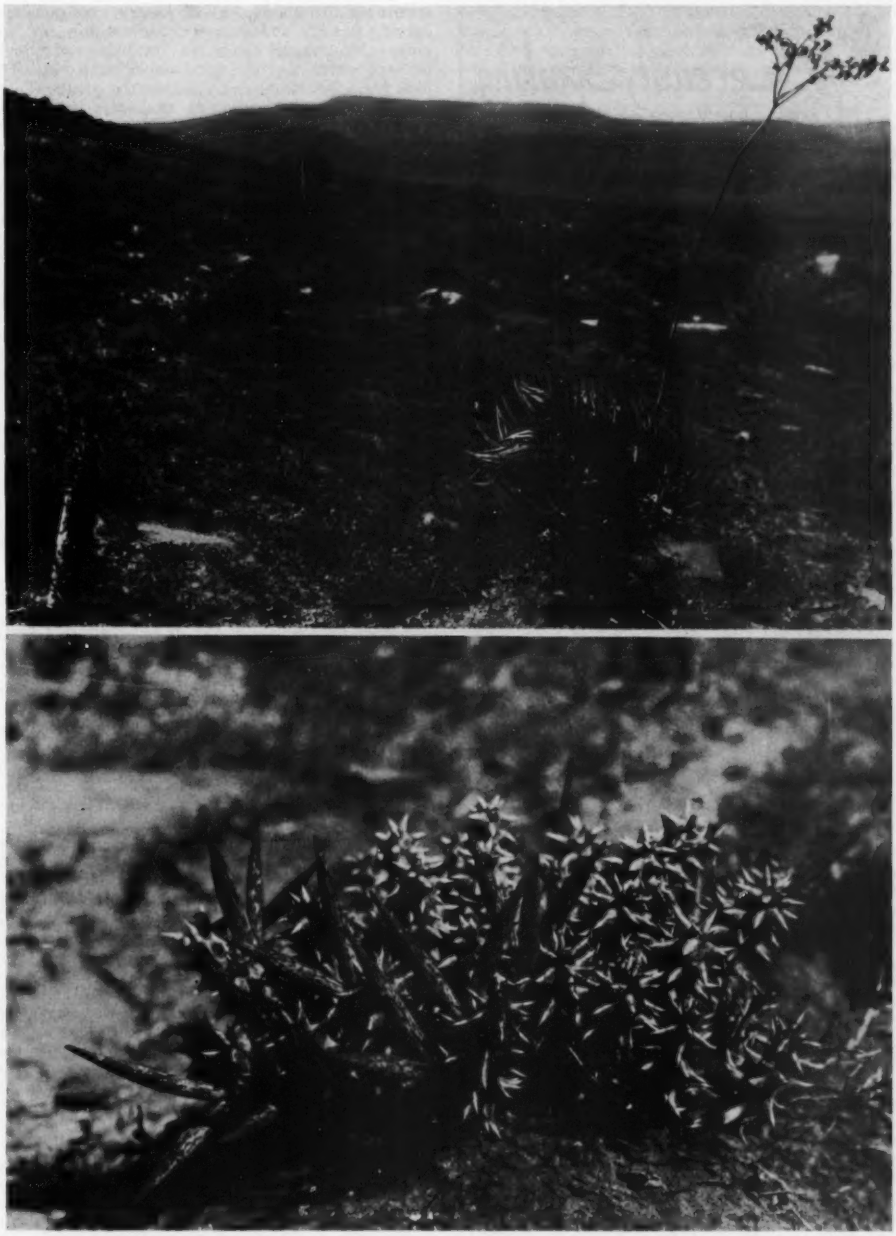
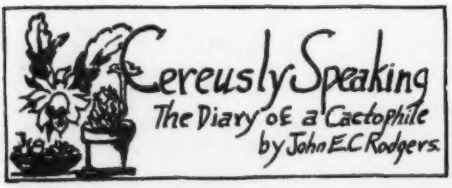


FIG. 65. Above: Looking northwards up Botterkloof with *Euphorbia hallii* in the left foreground and *Cotyledon wallichii*. FIG. 66. Below: *Caralluma* sp. with its buck-horn fruit growing in Botterkloof with *Euphorbia hallii*.



Last December I decided Cereusly Speaking wouldn't be missed with the excellent, popular, as well as the scholarly scientific articles appearing in our JOURNAL. Well, I was wrong if my mail means anything. So I'll keep on with Cereusly Speaking for the 13th year. I do appreciate the letters, photos, seeds, chemicals, cuttings, etc., which have come to me through your kindness and the uncomplaining editor, Scott Haselton, who deciphers my notes.

The winter season as such is almost over but the changeable weather of the past winter has taken my "hard coal" down as rapidly as a severe winter. I couldn't let the fire go out and I couldn't let it burn briskly. January gas bills were one-third more than December and people complained. I am glad I use coal.

My window garden of Haworthias, Aloes, Gasterias, Euphorbias, Crassulas, Sedums and small cacti has been a good test of what does do well in the indoor garden, where light is good but little sunshine is recorded from November through early March. It hardly ever exceeds 21 days in all.

The plants I have do not show etiolation—the coolness of the window "down draft" and the fact that I water well once a week keeps them in good condition. The varieties and species of Haworthias are: *radula, haageana, limefolia, coarctata, tesselata, cymbiformis, chalwinii* varieties and some that are nameless.

They thrive with or without drainage holes in the ornamental pots. The soils should be changed every two years but should be on the lean side to keep the plants from getting "out of hand." I use glazed pots 3 to 5 inches in diameter of green, old rose, Chinese blue, cream and dark brown. These add a decorative note as well as being a frame for the succulent beauty of each plant. I try to put a light green Haworthia in the old rose, brown or Chinese blue pots. The darker species go in any color of pot and look pretty.

Frequently people write saying that Haworthias are hard to grow. I do not find them so. My only objection is the common types refuse to stay offsetless in smaller pots and require larger and large pots or banishment to the greenhouse. I have them there in 5, 8, 12, and 14 inch bulb pots. I use a richer soil for these as I expect them to supply my trading stock.

The collector has almost unlimited species and varieties to choose from. I have about 60 species and 40 varieties which thrive with no particular phobias on their or my part. So far I've never lost one plant entirely although I've come close to it. *"Succulents for the Amateur"* lists 27 species and varieties. J. R. Brown, writer par-excellence about Haworthias, began his fine articles (Notes on Haworthias) in December, 1937 (Vol. IX, No. 6, Page 86) with *H. truncata.* He followed with *Haworthia diversifolia, denticulata, cuspidata, tesselata* and *margaritifera.* Because of his descriptive prowess and recommendations, I have bought the above and acquired most of the others he has written about in the 17 years since 1937. (I have *Haworthia brownii,* named in his honor.)

The Aloes that I've tried in the house over a period of years thrive in a light friable soil with new soil every year (if you prefer, twice every two years, the results are also good). Aloes: *ausana, variegata, vera* hybrid, *humilis* and *longistyla* are within my size range. Most Aloes are traffic "hazards" and should be kept where they are not bumped or jostled. The ends break off easily and disfigure the plants. I like them in with my Haworthias, etc., for a variation in height, coloration and pattern. Most of the Gasterias fit into the picture also. I've used *G. verrucosa, acinacifolia, armstrongii, maculata, caespitosa,* etc. The smallest one I've ever seen was given to me about 10 years ago by Dr. James F. Machwart, Parma, Ohio. This variety is dark green with white markings in an all over design. The leaves are never over an inch and a half long and three-fourths inch across. It is caespitose. The plant now occupies a three inch pot and has 7 heads in the 10 years I've had it. I've found no name or description given for it.

Most Gasterias are suitable for cool window gardens because they grow in two opposite rows and not in rosettes as most Aloes and Haworthias do. Since these three genera are listed under the Liliaceae they take a well drained sandy soil with enough humus to retain moisture but not enough to keep their feet wet. All Liliaceae like cool feet and the succulent lilies are no exception, so they are ideal for near windows with cool down-drafts.

This coupled with their adaptability and ease of culture has made them a favorite with indoor gardeners whether they have one or many. Although the Liliaceae like some sunlight, they can go with a limited amount supplemented with artificial illumination. If they show too much yellowish green growth and lack vigor set them in good light and their color and health soon come back. If too elongated break out the tops and reroot. The stems will reward you with new offsets.

The blososms of the Haworthias are not large but the six-petalled lily flowers are interesting. I've found the *H. tesselata* species and varieties are fragrant. One other species or variety similar to *H. plainifolia* with a hair-like tip at the end also has perfume. It could be *H. dielsiana* (see JOURNAL, Vol. X, No. 4, October, 1938). These have a true lily perfume (see Cereusly Speaking, pg. 28, Vol. XXV, No. 1, Jan.-Feb., 1953). This perfume makes a happy surprise for me. I have found no perfume or odor to any of the Aloes or Gasterias that I have had bloom either in the window garden or greenhouse. The books about these liliaceae are, as far as I can find, silent as to the perfume of any of the Aloes, Gasterias, and Haworthias.

Most growers tuck a few rare plants of the liliaceae (out of sight or reach) for their own "acquisitiveness" but grow only a few of the *H. margaritifera* and *H. attenuata* complex for the "trade." I saw thousands of these at Gates Gardens last summer in California. The uniformity of size, height of bloom stalk and flowers was arresting like looking at a prairie of grasses. Thousands and thousands of this complex which Mr. Gates ships to fill orders he has taken here and in other locations.

When I visited Ernest Beahm's Epiphyllum Gardens I saw a large lathhouse filled with pots of all I had heard and read about plus a hundred or so more rarities. Here was the collector who issues listings of Haworthias and other liliaceae, but known for his work with the Epiphyllums. I bought seven offsets of rare Haworthias which are now the pride of my collection.

Ernest Beahm had hundreds in a comparatively small space. Most of the pots were 6 to 10 inches across. Some are prolific offsetters and others are single plants which must be carefully hand pollinated to get the true plants to reproduce.

In California Howard Gates grows his Haworthias

under green camouflage netting while Beahm uses lath. Most growers that I've met in Canada and the U. S. A. are in agreement about Haworthias needing protection for the sun, whether it is tobacco cloth, netting or lath. The soils are all loamy leaf-mold, coarse sand mixtures, whether natural or prepared. The Aloes in California are often field grown in long rows which to my limited collection looks like "commonness."

The Crassula is one of the most versatile of the succulents for window gardens. Varying from the small *C. terres* to *C. argentea* (Jade Tree). I've used most of those pictured in *"Succulents for the Amateur,"* pages 75-127 and found them with few exceptions, adaptable to limited light, variable heat, overwatering and under-watering, dust and poor soil (starvation diet is best for some). Some such as *C. argentea, cordata, arborescens* and *cultrata* need pruning at times. I recommend the Crassulacea, large, medium, and small.

Most of those I have used in the window garden have flowered. The flowers are usually five petalled and range from white through yellows, orangey yellows to pink and "red." I keep *C. orbicularis* in the window garden as a conversation piece as it offsets freely on long thin stems which are very decorative. Three fine hanging types are *C. perforata* (string-o-buttons), *C. rupestris* and *C. brevisetosa.* All three of these are pendulous but not vines. I suspend them in hanging pots for top interest and framing for the window garden. *Crassula schmidtii* is the most colorful of the true species. It has pinkish red flowers on stems which stand well about the rosettes of thin reddish green leaves. It sets seed readily and produces offsets from the flower stalks when planted as well as from the base of the plant.

Button Gardens, Dish Gardens, terrarinums (dry and moist), window soil gardens or Window Gardens are all sources of continued interest. I firmly believe that the antidote for our jittery children and adults is back to the soil where the urge we all have to grow something absorbs us and makes us forget time, place and scene of action.

Happy Window Gardens for you.

JOHN E. RODGERS

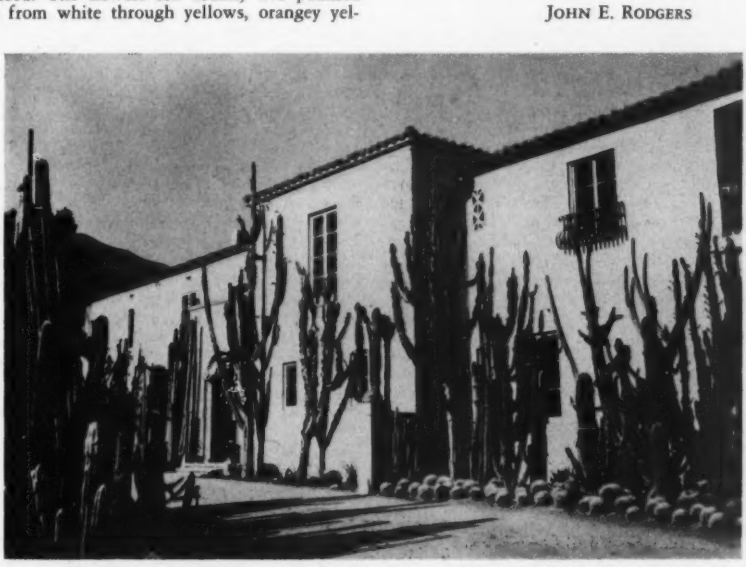


FIG. 67. A few of the large cacti on Madame Ganna Walska's estate.

A SPECIAL EVENT

At the request of many mebers of the Cactus and Succulent Society and members and friends of some of the local Affiliates, a special tour to the Gardens of Madame Ganna Walska, in Montecito, has been planned and arranged to take place on Sunday, June 13th, 1954.

In order to enter the Gardens in a group, which is required, we will have to meet at the corner of Highway 101 and Sycamore Canyon Road in Montecito, at not later than 12:30 p.m. (after lunch) and then proceed from there to the Gardens in a group.

The trip will be made in your own cars as that will make possible the attendance of many who could not otherwise make the tour. From Los Angeles you should allow at least three hours driving time for the trip to Montecito.

If possible, take as many others with you as your car will carry, either friends or members of the Society or of the Affiliates, who do not otherwise have transportation. These can be found through your local Clubs.

To reach the meeting place, proceed north on either Highway 101 or on Ventura Boulevard from Los Angeles area, through Ventura and on to Montecito.

This is a trip well worth taking as Madame Walska has a beautiful, well laid out garden, with many fine plants, all arranged in beautiful surroundings.

Please mail a Post Card to the Secretary, Ethel Rush, 820 W. 115th Street, Los Angeles 44, California, stating that you are going and giving the number of persons in your party.

HARRY JOHNSON, Committee Chairman

SPINE CHATS

LADISLAUS CUTAK

Back in 1929 H. Herre first collected a small Crassula in the Richtersveld assuming it was either a variety or form of *C. macowaniana.* Later two more collections were made and examination disclosed that it had nothing to do with the latter species, but the plants died before descriptions could be made. Herre recollected it ten years later but again plants were lost. Finally in 1949 additional specimens were found and now it has been finally published as a new species, *Crassula fusca.* In its natural environment it grows either alone among stones and crevices or together with other shrubs in the shade or half-shade or higher ones. *Crassula fusca* is a perennial, glabrous succulent with rust-red leaves and tiny white flowers. It must not be cultivated too dry but it never wants to be too wet either. The specific name was chosen because of the most beautiful colored leaves.

* * *

Mr. H. Hall of the Kirstenbosch Gardens found a new undescribed succulent spurge growing in the open near the roadside in Cape Province. It was brought to the attention of Dr. R. A. Dyer who promptly named it for the discoverer, *Euphorbia hallii.* It is said to be a very distinctive spurge unlike any other growing in the Province and probably comes closest to *E. monteiroi.* It is a perennial succulent with spreading thickened roots and a sparsely branched stem producing short linear channelled leaves which are deciduous and the fact that it produces several peduncles from a single flowering eye in successive seasons is a peculiar feature. It is said the red glands, ovary, style and filaments make it conspicuous when in flower.

* * *

According to Dr. R. H. Compton, the genus *Othonna* is well represented in the Cape Province. He writes about three of the dwarfest examples of Othonna that possess a thickened and somewhat branched aerial stem which is very liable to escape notice in the field owing to the fact that their very short brown stems hardly rise above the surface of the ground and are often covered by blown soil, and because of their small leaves and flowers and the short season during which they are in evidence. *Othonna cacalioides* and *O. minima* were first discovered over a century ago but seldom recollected since and the third one, *O. pygmaea* is a new species. All three are said to grow within 50 miles of one another, and all are found in similar situations in shallow depressions or crevices in hard level or gently sloping quartzitic rocks, exposed to full sunshine. In their habitat they are associated with other small succulents and bulbous plants. *O. pygmaea* is a small depressed shrublet, slightly branched, with softly succulent deciduous leaves and a paniculate inflorescence of yellow flowers.

Detailed descriptions of *Crassula fusca, Euphorbia hallii* and *Othonno pygmaea* can be had by perusing the October, 1953, issue of The Journal of South African Botany.

* * *

Since I have the opportunity to glance at most of the world's botanical literature which is being deposited in the library of our institution, I have made it a point to bring to the readers' attention notices of newly described cacti and succulents, especially in such journals that are not readily available to students, and I feel that SPINE CHATS, in this respect, is serving a good purpose. This is attested by letters that come to my desk. A recent letter from Gordon Rowley of the John Innes Horticultural Institution states that my regular column is much enjoyed as it brings to his notice numerous scientific papers in journals which he would otherwise have missed. Also that SPINE CHATS has brought to his attention several newly-published species for inclusion in the I. O. S. Repertorium, of which he is an assistant editor. When readers derive some worthwhile information from my bi-monthly chatter then I am well repaid for my effort.

* * *

The Fuaux Herbarium Bulletin (Part 5, November, 1953), contains an interesting treatise on the Pasacanoid Trichocerei of South America by Prof. Martin Cardenas in which five new species and four varieties are described. The pasacanoid trichocerei are those more or less huge cacti growing on the high Andean plains or slopes of South America. They are all day flowering and the species have very hairy ovaries and comparatively small fruits. The two new varieties of *Trichocereus poco* are *fricianus* and *albiflorus* and they differ from the type by producing dense cephalium-like top tufts of white spines. The second variety produces creamy white flowers while the first has magenta purple blooms. *T. orurensis* and its variety *albiflorus* are similar to *T. poco* except that the new species is a lower, basitonically branched, fewer-ribbed plant with purple-lilac flowers and the variety bears white flowers. *T. antezanae* is of similar habitat as *T. oruensis* but bears closer areoles, longer and much thinner spines, yellow flowers and smaller fruits. *T. herzogianus* is like *T. bertramianus* but has less prominent and wider spaced areoles, much fewer and distinctly arranged spines and different shaped flowers. The variety *totorensis* possesses darker green branches, more distantly spaced areoles, fewer and shorter darker spines and longer, darker colored flowers. *T. conaconensis* is allied to *T. bertramianus* but differs by its much fewer and more acute ribs, the wider spaced and smaller areoles, the fewer and thinner spines and the presence of hairs at the areoles. *T. narvaecensis* is distinguished by its low habit, small areoles, and very short spines.

In the same Bulletin John Akers describes a new *Mila albo-areolata,* with its distinctive white areoles and black tipped spines and golden yellow flowers. It was found in the hills south of Lima, Peru.

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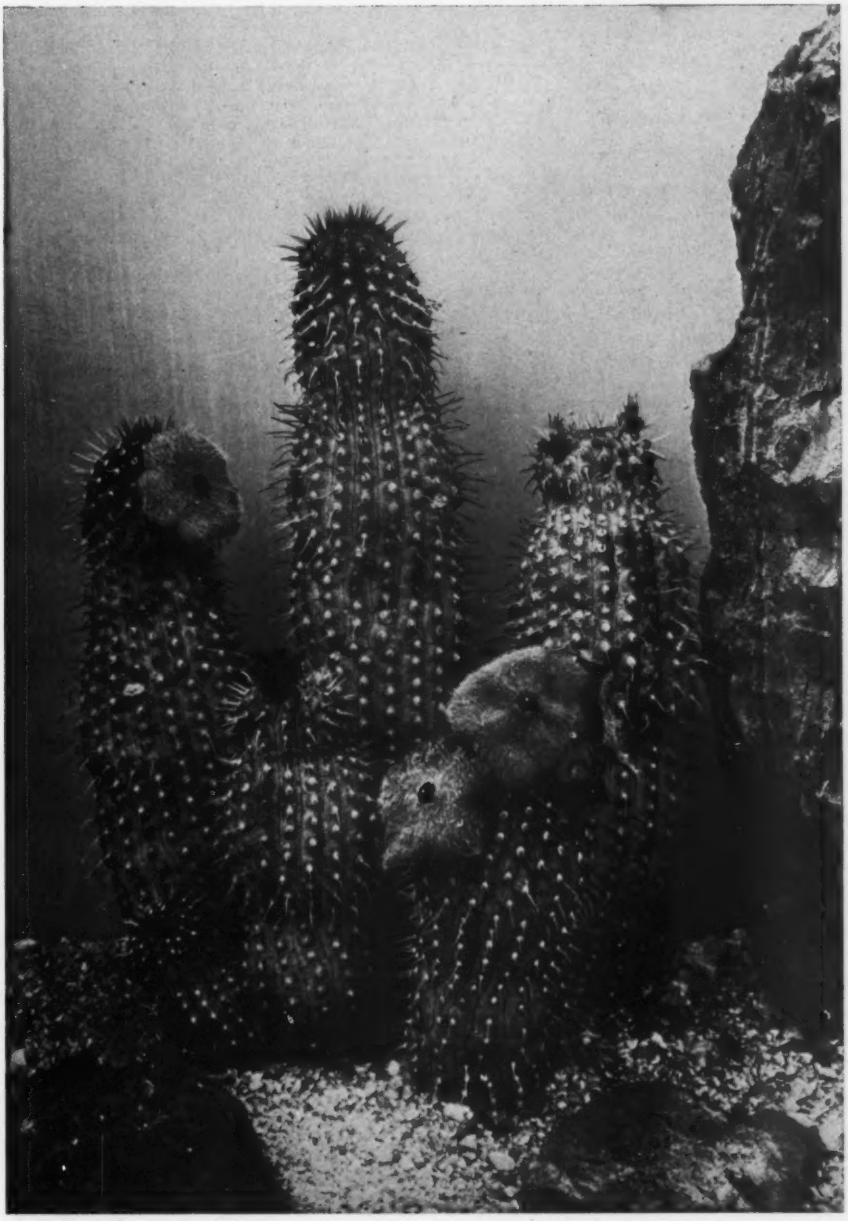

FROM THE PRESIDENT'S DESK

With the advent of spring comes the awakening of the old desire to visit the deserts and mountains and to hunt for and find the specimen which has eluded you on previous trips into the wilds. Also with this time of year comes the work of putting our own plants in shape for another season of flowers and enjoyment.

It is no different with the officers and members of the Executive Board of your Society. At this time of year they are trying to find and bring to you whatever they can of interest, pertaining to the plants, their habitat and habits and to make it possible for those of you who live near enough to Los Angeles or who can come that far, to take part in events calculated to be of extreme interest to persons who enjoy the desert flora.

Since you last heard from me, the Society has conducted a fine tour, described ably in another part of this Journal, to the justly famous Huntington Library, Art Galleries and Botanical Gardens, which I am sure was thoroughly enjoyed by all of the more than one hundred and fifty persons who attended and made the tour.

The Field Trip Committee prepared and conducted a camping trip, held May 1st and 2nd, in the heart of the Colorado Desert, at the Joshua Tree National Monument, which is in the middle of the cactus country of Southern California and many fine plants were seen, many in flower.

The Committee has also prepared another event, to be held June 3rd, at which Dr. E. Yale Dawson will show colored slides and talk on "Giant Cacti in Southern Mexico." This will be a meeting in the Auditorium of the Pasadena Public Library, open to all members, their friends and the general public.

In the May-June, 1953, issue of the Journal, Mr. Haselton inserted an announcement of an invitation by Mr. Guy Quinn, to hold the 1957 Convention of the Society at his place in Eastland, Texas. Some members of the Society have thought this invitation referred to the 1955 Convention and because of this belief, have been quite upset because no consideration was given it by the delegates at the 1953 Convention.

The truth of the matter is, the offer was not even presented to the 1953 Convention Delegates because Mr. Quinn would not be ready to have the Convention at his place until 1957 and for this reason it was felt it was better not to say too much about it.

Seemingly the members who have complained, did not read their Journal very thoroughly or they would never have made this mistake. Be assured that Mr. Quinn's offer will be considered and acted upon at the proper time.

Many letters have come in from members all over the country and some from foreign countries, expressing their views of how the Society might be made more helpful to them. A Committee is now studying these letters and trying to find ways to adapt some of the suggestions to the use of the Society. When this Committee makes its report, I will bring to you a summary of the results.

It is gratifying to have so many of the Affiliates asking for and using the colored slides and other helps furnished by the Society, through the Corresponding Secretary, Mrs. Mary Glade, 7600 Verdugo Crestline Drive, Tujunga, California.

The Research Board is still working but could handle more questions from you members, regarding identity, history or handling of cacti and the other succulents.

Our membership contest is progressing slowly but it seems that too many of you are still thinking, "Let George Do It," and George is busy with other things. Let's all get behind this contest and send in those new members and thus win one of those splendid plant prizes.

HOMER G. RUSH, *President*

*Most of the Society members know that Dr. Benson is on our Board of Directors and active in promoting the Cactus and Succulent Society of America. We are fortunate in having the support of such prominent men in guiding the Society.